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DIVERTICULA OF SMALL INTESTINE, OTHER THAN MECKEL'S DIVERTICULUM *

JAMES T. CASE, M.D.

BATTLE CREEK, MICH.

Before the year 1912 it is not recorded that any case of duodenal diverticulosis had been discovered with the roentgen rays. Indeed, comprehensive search of the literature by Baldwin,[1] Buschi,[2] Wilkie,[3] Fischer[4] and others showed that the total number of known cases of diverticula of the duodenum did not exceed 100. Baldwin's Cornell series of fourteen cases of duodenal diverticula out of 105 necropsies was remarkable for the reason that so large a number as fourteen should be discovered among such a relatively small series. Diverticula of the jejunum and ileum had also been recorded in the anatomic literature, and at least one case discovered in the course of surgical operation, as recorded by Gordinier and Sampson. With an occasional exception these diverticula of the small intestine had been considered as merely of anatomic interest and without clinical import, for the majority of patients exhibited few if any evidences of pathologic interest in the diverticula other than their presence. There were some notable exceptions, which will be referred to later.

I presented my first series of four cases of duodenal diverticula discovered during the routine roentgen-ray examination of the gastro-intestinal tract, in the Scientific Exhibit of the American Medical Association in 1913. In September, 1915, I[5] reported further on these studies before the American Roentgen Ray Society. In 1919, I presented roentgenograms in the Scientific Exhibit of the American Medical Association, representing twenty-five new cases, and again called attention to the frequency with which diverticulosis of the duodenum is associated with sacculations of other portions of the digestive tube and of the urinary bladder.

In the present communication I have attempted to sum up my cases and to draw some conclusions regarding the treatment indicated. I find that in 6,847 complete barium meal studies (meaning the routine observation of the opaque meal in its passage from mouth to rectum, followed by a supplementary barium enema), I and my associates have recorded characteristic evidence of duodenal diverticulosis in eighty-five cases, diverticulosis of the jejunum in four cases, and diverticulosis of the jejunum and ileum in one case. As suggested in the title of this paper, we have not included in these statistics any case of Meckel's diverticulum, although several have been found.

Up to April, 1920, the only other reported cases of duodenal diverticulosis roentgenologically discovered were as follows:

1. Forssell and Key,[6] in 1915, reported the case of a woman operated on, May 13, 1914.
2. Basch reported a case in which Elsberg operated, Jan. 31, 1915.
3. Stewart,[7] in 1916, reported several cases, verified by operation, found with the roentgen rays in 1915 and 1916.
4. Ritchie and McWhorter,[8] in 1916, operated on a patient, June 30, 1916.
5. Reichmann,[9] in 1916, reported a case of duodenal sacculation discovered with the roentgen rays.
6. Roberts and Cole, in 1919, presented a series of cases at the 1919 meeting of the American Gastro-Enterological Association.

Doubtless there have been other cases; certainly in the future a large number will be found, now that the roentgen rays have made possible the early recognition of this interesting lesion.

As to diverticula of the jejunum and ileum, careful search has failed to reveal any reported case discovered roentgenologically and proved at operation. I believe my cases are the first on record. Two of my five patients have been operated on. In the other three the findings were so characteristically similar that no reasonable doubt can exist as to the diagnosis; but operative proof was not obtained.

DIVERTICULA OF THE DUODENUM

Frequency.—Necropsy reports quoted by Baldwin, Buschi, Davis,[10] Wilkie, Fischer and others give varying figures as to the frequency of duodenal diverticula

* From the Surgical Department of the Battle Creek Sanitarium.

* Read before the Section on Gastro-Enterology and Proctology at the Seventy-First Annual Session of the American Medical Association, New Orleans, April, 1920.

* Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the author's reprints. A copy of the latter will be sent by the author on receipt of a stamped addressed envelop.

1. Baldwin: Duodenal Diverticula in Man, Anat. Rec. **5**: 121.
2. Buschi: Beitrag zur Untersuchung der Duodenaldivertikel, Virchows Arch. f. path. Anat. **126**: 121, 1911.
3. Wilkie: Duodenal Diverticula and Duplicature of the Duodenal Wall, Edinburgh M. J. **11**: 219 (Sept.) 1913.
4. Fischer: Acquired Diverticula of the Bowel, J. Exper. M. **5**: 33, 1900.
5. Case, J. T.: Roentgen Observations on the Duodenum, with Special Reference to Lesions Beyond the First Portion, Am. J. Roentgenology **3**: 314 (June) 1916.
6. Forssell and Key: Ein Divertikel der pars descendens duodeni mittels Roentgenuntersuchung diagnostiziert und operativ entfernt, Nord. med. Arch. **48**, No. 2, 1915.
7. Stewart, W. H.: Roentgen Diagnosis of Obscure Lesions of the Gastro-Intestinal Tract, Am. J. Roentgenol. **3**: 202 (April) 1916.
8. Ritchie, H. P., and McWhorter, G. L.: Duodenal Diverticula, Surg., Gynec. & Obst. **25**: 485 (Nov.) 1917.
9. Reichmann: Berl. klin. Wchnschr., 1916, p. 1118.
10. Davis, N. S.: Diverticula of the Duodenum, Tr. Chicago Path. Soc. **9**: 1 (Feb.) 1913.

in man. One author claims as high a figure as 11 per cent. of all such sacculations of the alimentary tract. Linsmayer [11] found forty-five cases of duodenal sacculations in 1,367 necropsies (about 3 per cent.). Rosenthal [12] found three cases in 100 necropsies (3 per cent.). The Johns Hopkins Hospital statistics on 2,600 necropsies record thirteen diverticula other than Meckel's in the small intestine and eighteen in the colon. In my own series of 6,847 consecutive barium meal studies, duodenal diverticula were found in eighty-five cases (1.2 per cent., or in the proportion of 1 to 82. For comparison, it may be interesting to know that in the same series we found colonic diverticula in 138 cases, or approximately 2 per cent.

In Baldwin's Cornell series there were two diverticula in one case, the other thirteen being single. Buschi found thirty-five cases with a single diverticulum, thirteen with two, two with four, and two with five. In my series only one diverticulum was recognized in seventy-eight cases, the other seven cases showing from two to four diverticula.

Size.—The diverticula vary in size from a pea to a hen's egg. Baldwin's largest diverticulum measured 5 cm. in diameter. In my series of eighty-five cases, the shadow of the barium-filled diverticulum measured more than 4 cm. in fourteen cases, and in one of our ten operative cases the excised diverticular sac measured 5 cm. in longest diameter. The average size of the sacculations in my series was 2.8 cm.

Position.—In Baldwin's Cornell series the sac originated in the first part of the duodenum in two cases, in the second portion in seven cases, and in the third portion in six cases. In my series the diverticula were thus distributed: first portion, seventeen cases; second portion (including those cases thought to be dilatations of the diverticulum of Vater), forty-nine cases; third portion and duodenojejunal junction, nineteen cases.

Fig. 3.—Enormous diverticulum of third portion of duodenum (shown by arrows) in case in which operation was performed.

Sex.—In 61 necropsy cases, reported in the literature, where the age was known, 38 (62 per cent.) were in males, 23 (32 per cent.) in females. In the present roentgen-ray series of 85 cases, 34 (40 per cent.) were in males, 51 (60 per cent.) in females.

Age.—Acquired diverticula of the duodenum are most frequently found in later life. Buschi states that 80 per cent of such sacculations occur after the age of 50. Secher [13] states that they have been found in infants. Simmonds [14] says he has seen diverticula near the pylorus in very early childhood and therefore he concluded that they were congenital; he had seen them lower down in the small intestine only in old persons. In my series the average age has been 56 years.

Contents of the Diverticulum.—In two cases reported in the literature the sacs have contained gallstones, one in one instance, twenty-two in the other. Usually the contents are chymous. After an opaque meal, it is possible to find barium in the diverticulum for many hours and sometimes for several days. In one of my cases barium was still to be seen in the sac on the seventh day. Retention of barium beyond forty-eight hours is not unusual. The average emptying time of the sac in eighteen consecutive cases was eleven hours. The normal emptying time of the duodenum is from four to five hours.

Description of the Sac.—In the diverticula of our series which were removed surgically by Dr. J. H. Kellogg and myself, the muscularis was lacking over most of the sac in every instance. Of course we dealt only with large sacs, and it is entirely possible that study of smaller diverticula would have shown the presence of muscularis over the entire fundus of the sac. It would seem that the absence of muscularis over the larger sacs is due to the fact that this coat does not permit of sufficient stretching to cover the entire fundus, and it becomes thinned out or entirely missing at a short distance from the orifice of the diverticulum.

The opening between the duodenum and the sac may be large or small, rounded, fissure-like or irregular. When the opening is very large, it is naturally difficult to keep barium in the sac long enough to make roentgenograms showing the condition.

In many instances of diverticulosis of the second portion of the duodenum, the common bile duct and the pancreatic duct lie in very close relation to the wall of the sac, one or both sometimes traversing the lateral wall, or even emptying into the fundus of the diverticulum. In one instance of our series there was indubitable proof that barium taken by mouth found itself in a perivaterian diverticulum, possibly a dilatation of Vater's ampulla, and later passed into the gallbladder, visualizing gallstones which had previously been invisible to the roentgen rays.

I once saw at the Mayo Clinic a roentgenogram demonstrating the passage of barium from the duodenum into the hepatic ducts, beautifully outlining the larger biliary passages.

11. Linsmayer: Ueber Duodenaldivertikel, Verhandl. d. deutsch. path. Gesellsch. **17**: 445, 1914.
12. Rosenthal: Können Duodenaldivertikel eine klinische Bedeutung erlangen? Med. Klin. **4**: 1421, 1908.
13. Secher: Om Divertikler i Ventrikel og Duodenum, Hospitalstidende **60**: 582, 1917.
14. Simmonds: Verhandl. d. deutsch. path. Gesellsch. **17**: 445, 1914.

Pathology.—The subjoined report is typical for such diverticula as have been removed at operation:

A thin-walled sac, having the normal thickness of the intestinal wall for only 2 or 3 mm. about its orifice. Here it had all the layers of the normal intestinal wall; elsewhere the muscularis was missing. The mucosa and the muscularis mucosae were normal. The submucosa was thickened. There were occasional small groups of Brunner's glands; elsewhere the submucosa consisted of loose connective tissue richly supplied with blood vessels.

Numerous recently formed adhesions surrounded the diverticulum, which was freely movable when the adhesions had been divided. As already mentioned, the sac may contain one or more calculi. Pancreatic tissue may line the fundus. In the majority of cases there is no evidence of inflammatory change.

In a case reported by Akerlund,[15] operation revealed marked swelling of the duodenal wall bordering the diverticulum, while the sac itself held a mass of necrotic pancreatic tissue which had resulted from an extension of the diverticulitis into the pancreatic substance lying next to the sac. In the preoperative examination of this case there was seen a large spherical diverticulum of the third portion of the duodenum in addition to a barium residue at the site corresponding to Vater's ampulla. On a reexamination a week later it was impossible to visualize Vater's ampulla. Two days later acute epigastric symptoms set in, and five days later the patient submitted to operation with the findings given above.

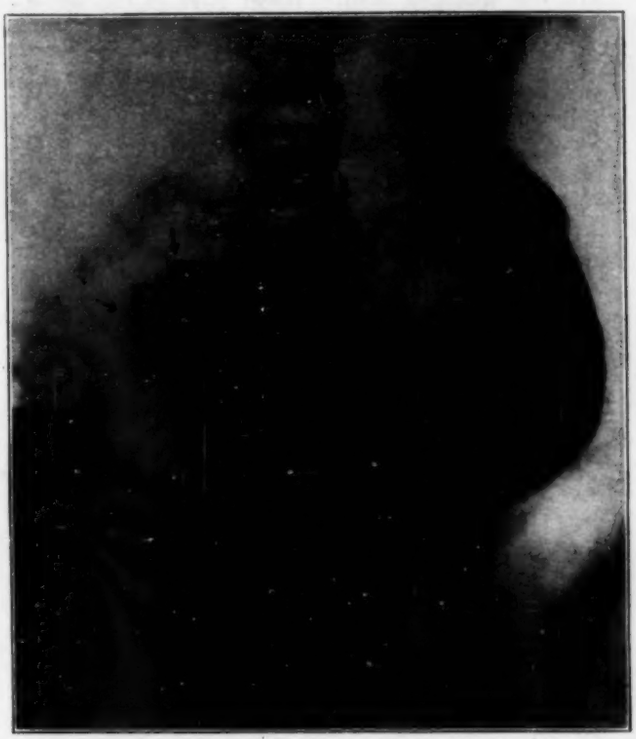

Fig. 4.—Diverticulum of third portion of duodenum in case in which operation was performed.

Akerlund's case parallels one of my own, already reported,[16] in which at operation we were unable to excise the diverticulum because of its intimate adherence to the surrounding pancreatic tissue, where there was every clinical and gross pathologic evidence of a pancreatic involvement. In my case almost complete relief followed cholecystostomy.

There seems to be in some cases a suggestive connection between vaterian and perivaterian sacculations and chronic changes in the pancreas and biliary passages. Wilkie reported two cases in which such a diverticulum was in close anatomic contiguity with the common bile duct together with signs of stasis in that duct, without there being any intrinsic obstruction of its lumen. Rosenthal and Bauer [17] have each recorded cases of duodenal diverticula in which the diverticulum was the seat of severe inflammatory changes and simultaneously Vater's ampulla was swollen, even glued together with mucus, causing dilatation of the pancreatic and biliary ducts. Akerlund advances the following theory as to the relation between diverticula of the duodenum and pathologic changes in the pancreas and biliary tract: When a duodenal diverticulum, which is usually conceived as being of direct or indirect congenital origin but prone to become enlarged later in life, has reached a certain size, then retention of the duodenal contents is likely to occur. This may lead to a catarrhal diverticulitis of varying intensity and with alternating swelling and relief of swelling about the papilla of Vater. In certain cases, then, it is possible for a secondary dilatation of Vater's ampulla to occur, with an insufficiency of the sphincter of Oddi. During the periods of insufficiency, infectious material from the duodenum is likely to enter the ampulla, perhaps even the pancreatic or bile ducts, with ultimately an inflammatory change in the pancreas.

Bauer cites the case of a man, aged 52. During several months the patients had suffered severe vomiting spells coming on from two to three hours after meals. In spite of a gastro-enterostomy, the patient died from persistence of the vomiting. At necropsy there was found marked dilatation of the stomach and the first part of the duodenum, apparently due to two duodenal diverticula, one as large as a hen's egg, filled with yellowish gray masses of chyme and mucus, compressing the lumen of the second portion of the duodenum in much the same manner as that in which an esophageal diverticulum may compress the esophagus. In another necropsy case cited by Bauer a duodenal diverticulitis caused a duodenal catarrh with resultant swelling and occlusion of Vater's papilla and stagnation of bile. In his first case roentgen-ray examination made before operation failed to disclose the diverticula; in the second case no roentgen-ray study was made.

In the majority of cases recorded in the literature and in most of my cases confirmed at operation there was very little to indicate pathologic changes in the wall of the sac. That such may develop, however, is clearly shown by the foregoing recital of cases and it is therefore important that in every case in which roentgenologic study develops proof of duodenal diverticulosis the question of surgical intervention should at least be considered. This is usually not difficult to decide, for in most of the cases likely to be found with the roentgen rays there will be found evidence of some surgical condition of the pancreas or biliary tract which will make inspection of the duodenum possible. The data given relative to the position of the

15. Akerlund: Roentgenologiska duodenalobservationer, Hygeia **81**: 449, 1919.

16. Case, J. T.: Roentgen Observations on the Duodenum, with Special Reference to Lesions Beyond the First Portion, Am. J. Roentgenol. **3**: 314 (June) 1916.

17. Rosenthal and Bauer: Ueber das Duodenaldivertikel, Wien. klin. Wchnschr. **25**: 879, 1912.

fundus of the diverticulum should be recalled, however; for it will often prove a difficult matter to discover the diverticulum at operation, owing to its retroduodenal or retropancreatic location, and in many cases the inadvisability of making an extensive dissection to uncover the sac. When the sac lies ventral to the pancreas, its operative investigation will prove easy; when dorsal to the pancreas, mobilization of the duodenum is necessary.

Diagnosis.—As will be surmised from the foregoing, the diagnosis depends exclusively on the roentgen findings. So far as I know, no case has yet been recognized before operation except on evidence furnished by the roentgen study. It is therefore appropriate to devote space to a detailed description of the necessary technic. It should be remarked that in general such diverticula are found in the roentgen investigation of individuals presenting right upper quadrant symptoms, sent in from the internist with a tentative diagnosis of duodenal ulcer, gallbladder disease, or chronic pancreatitis.

I described this technic, already then in use by me for five years, at the 1915 meeting of the American Roentgen Ray Society.

The patient, standing erect before the fluorescent screen, swallows a third of a glass of water into which has been stirred a heaping teaspoonful of barium sulphate. The pyloric region is carefully watched for the behavior of the first of the opaque mixture to reach it. This barium-water mixture usually begins to pass at once into the duodenum, so that it is more or less well visualized from the very beginning of the meal. This is followed by the usual barium meal, which in our practice consists of 1 ounce of barium sulphate in a glass of hot malted nuts or hot malted milk, and 1 ounce in a glass of buttermilk given cold. A brief further observation is made with the patient erect. He is then placed on the horizontal fluoroscope, and, if any delays are necessary, he is asked to spend the time lying on the right side so that gravity may aid in filling niches or sacculations in the pyloric zone. When all is ready so that the observation can begin the moment the patient turns over, the observer, standing at the patient's left, with his gloved left hand makes strong pressure over the duodenojejunal junction, at the same time pressing toward the pylorus the contents of the stomach (Fig. 1). The patient is then asked to inhale, hold the breath and turn quickly on the back, special care being taken the while to maintain compression of the duodenum between the palpating hand and the spine, thus artificially producing an obstruction near the duodenojejunal junction, and incarcerating the duodenal contents (Fig. 2). A wooden spoon may be used in place of the hand, if preferred.

Fig. 5.—*a*, diverticulum of third portion of duodenum; *b*, visualized ampulla of Vater, in case in which operation was performed.

Only by the use of this special technic have we been able, except by accident, to discover the diverticula of the third portion of the duodenum near the duodenojejunal junction. Attention is called to the fact that this technic can be followed out only fluoroscopically. If one depends only on roentgenograms, the majority of the diverticula of the third portion will be hidden by the overhanging or overlying portion of the gastric shadow and escape detection.

Having discovered a diverticulum, one should note (*a*) its exact location: (*b*) its size and general shape; (*c*) the dimensions of its orifice, whether narrow or free; (*d*) its mobility under the examining finger, guided by the fluoroscope; (*e*) the degree of retention; (*f*) relation of the shadow to a point of abdominal pain on pressure; (*g*) caliber of the duodenum proximal and distal to the diverticulum; (*h*) emptying time of the stomach.

With diverticula of the first portion, the roentgen study should especially aim to settle the question of duodenal ulcer which so often occurs opposite and just caudad to the diverticulum. Diverticula lying to the outer side of the first portion of the duodenum or the upper part of the second portion are very likely traction sacculations associated with gallbladder disease.

Stasis in the diverticulum is significant. In the majority of first portion diverticula there were associated evidences of old ulcer or gallbladder region adhesions and relatively short retention in the diverticula. The emptying time of the stomach was, on the contrary, often prolonged, and in several instances, in our series, as in the cases reported by Ritchie and McWhorter and by Basch, gastro-enterostomy was all the surgery deemed wise, no attempt being made to excise the sac. In Ritchie and McWhorter's case the diverticulum was plicated. In diverticula of the second portion, the diverticular sacs being parivaterian or dilatations of the ampulla itself, the retention of barium beyond forty-eight hours was a frequent observation. In many of these cases we have found signs of a coexisting pancreatitis, with unusual patency and dilatation of the ampulla of Vater, as has been confirmed by Akerlund and others. Diverticula of the third portion do not retain barium unless the communicating orifice is small, the degree of retention depending on the size of the opening. In one instance a large sac measuring 5 by 3 cm. retained barium longer than fortiy-eight hours.

Usually there was no tenderness on pressure over the barium-filled diverticulum. In a certain number of cases, however, especially with retention in the diverticulum and a syndrome characterized by distention, feeling of fulness, aching pain coming on from one to three hours after meals and persisting for one or two hours, regurgitation of sour fluid, and occasional nausea and vomiting, there seemed to be a definite coincidence between the diverticulum and a point of abdominal pain on pressure.

From the standpoint of possible surgical treatment, it is most important to determine whether the diverticulum lies ventral or dorsal to the pancreas or within the substance of this gland. Stereoscopic roentgenograms have been helpful in some cases. Careful manipulation of the patient with screen observation of the shadow movements as the tube is shifted about under the table sometimes answers the question. But the most satisfactory data are obtained by manipulation of the abdomen with the gloved hand under screen guidance; if the manipulating fingers can move the diverticulum, changing its position or expressing its contents, it is usually easy to find the sac ventral to the pancreas at operation, and in properly selected cases to resect it.

Treatment.—Although in the majority of cases seen at necropsy there have been few indications that treatment was needed, this cannot be stated as generally applicable to diverticula of the duodenum discovered with the roentgen rays. The latter category of patients are suffering from some more or less chronic digestive complaints, usually suggestive of right upper quadrant trouble, and there is always the possibility that there may exist some well-defined connection between the diverticulum and the patient's symptoms. Sufficient evidence to warrant an operation on the duodenum or gallbladder may be found, in which case it will of course be in order to investigate the sacculation if possible, and to deal with it as may be indicated. It is further important to bear in mind that in order to make a roentgen diagnosis of duodenal diverticulum there must occur the entry and retention of duodenal contents into the sac. The cases already referred to in this paper have abundantly demonstrated that a duodenal diverticulum may cause severe and even dangerous symptoms, especially when retention occurs, giving rise to serious pathologic conditions developing in the diverticulum itself or in the contiguous tissues. This is increasingly apparent in direct proportion to the degree of retention. Duodenal contents were found in a diverticulum on the seventh day after an opaque meal in one of my cases. The evidence before us therefore strongly suggests that the diagnosis of a duodenal diverticulum may generally be considered as indicating surgical operation. This is more true when the roentgen findings indicate a diverticulum whose fundus lies ventral or caudad to the head of the pancreas, or in relation to duodenal ulcer or disease of the biliary tract; less true when the diverticulum is deeply situated, lying dorsal to the pancreas or within its substance.

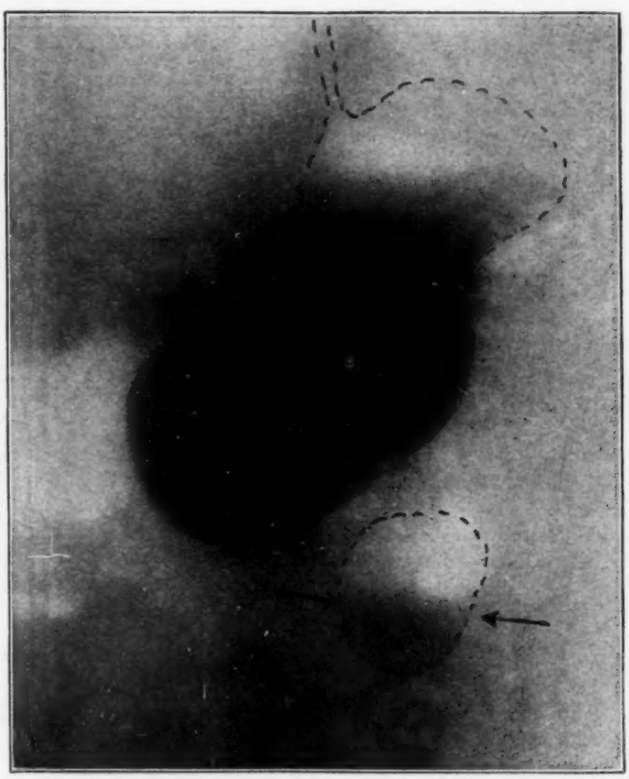

Fig. 7 (retouched).—Diverticulum of the jejunum (indicated by arrows), patient erect. Note fluid level with gas bubble above. Barium content of diverticulum. (To be compared with Figure 8.)

When surgical treatment does not seem indicated, or for some reason cannot be carried out, one must be content with general hygienic care of the gastrointestinal tract with such special measures as will minimize the likelihood of inflammatory changes being set up by the retained duodenal contents, with resulting duodenitis and possible temporary occlusion of the papilla of Vater. With colonic multiple diverticula I have suggested the use of barium sulphate in dram doses three times a day one day of each week, in order to keep the diverticula filled with barium, thus occupying the space that might otherwise be filled with putrescible or infectious material of a more threatening character. In the majority of cases of duodenal diverticula it is not likely that any form of nonsurgical treatment can have any appreciable effect on the contents of the sac or its likelihood to menace the patient.

JEJUNAL AND ILEAC DIVERTICULA

Less frequently than in the duodenum, yet more often than most of us appreciate, diverticulosis does occur in the small intestine below the duodenojejunal junction. Seven of the eighty-five cases already cited as duodenal diverticula occurred at the duodenojejunal junction; possibly they should have been classified with the jejunal saculations. In addition I have with the roentgen rays recognized five more cases of diverticulosis of the jejunum and upper ileum. Two cases have been confirmed at operation (Figs. 7, 8 and 9); the other three presented the same characteristic roentgenologic findings, and there can be little doubt as to the accuracy of diagnosis.

Constituting perhaps even less of a menace to a patient than duodenal diverticula, and certainly much less than the multiple colonic saculations so commonly found, jejunal diverticula may nevertheless become dangerous as the result of an acute inflammatory process within or around the sac. This possibility is well illustrated by the case of Gordinier and Sampson,[18] reported in 1906:

> The patient was a woman of 45. One of the diverticula had become inflamed and a diverticulitis resulted, with partial obliteration of the intestinal lumen. As the diverticulum extended between the folds of the mesentery, the latter became inflamed, thickened and puckered, thus causing an

18. Gordinier, H. C., and Sampson, J. A.: Diverticula (Not Meckel's) Causing Intestinal Obstruction, J. A. M. A. **46**: 1585 (May 26) 1906.

angular bending of the intestine with obstruction. The local peritonitis arising as a result of this gave rise to the formation of adhesions between the mesentery of the small intestine and the transverse colon and its mesentery, and thus kinked the transverse colon.

At operation thirteen diverticula were found in 40 cm. of intestine. The size varied from 0.5 to 1.5 cm. They were all on the mesenteric border and extended between the folds of the latter. In every instance a blood vessel extended over the surface of the diverticulum. One of the diverticula had become inflamed, and its base occluded, its patent distal portion having been converted into an infected cyst.

The following is a brief summary of the other cases of jejunal or ileac diverticula (other than Meckel's) which I have been able to find in the literature:

Bristow,[19] in 1854, reported a case with a solitary false diverticulum of the ileum just above the ileocecal valve.

Wallman,[20] in 1858, found a case in which in a section of small bowel 48 cm. long there were thirty-seven diverticula, thirty of them lying between the folds of the mesentery.

Klebs,[21] in 1869, found multiple diverticula numbering at least twenty in the small intestine of an old man, the sacculations lying between the mesenteric folds.

Moore,[22] in 1884, reported a case of multiple diverticula of the small intestine in a man, aged 40, the sacculations lying at the mesenteric attachment and including all coats of the bowel.

Buchwald and Janicke,[23] in 1887, described a case of true diverticulum of the jejunum in a boy of 6 years, probably congenital.

Birch-Hirschfeld,[24] in 1887, reported a case in which the ileum contained multiple diverticula scattered throughout its entire length.

Virchow,[25] in 1890, described a case of multiple diverticula of the jejunum in which some of the sacculations attained the size of a hen's egg.

Edel,[26] in 1894, reported a case in which there were seven diverticula in the jejunum varying in size from a hazelnut to an apple. This case also exhibited multiple diverticula of the colon.

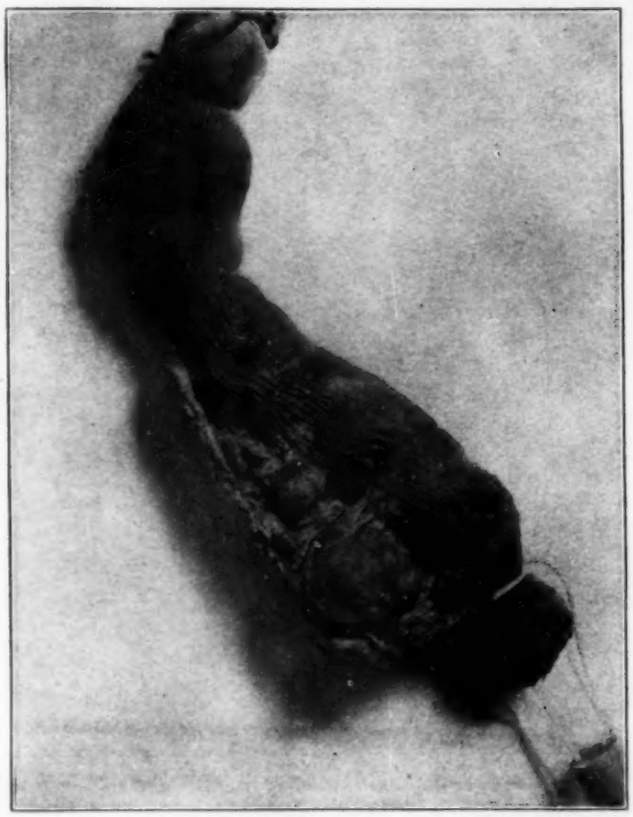

Fig. 8.—Resected jejunum containing several diverticula (see Fig. 7).

Seippel,[27] in 1895, reported a case of jejunal multiple sacculations.

Hansemann,[28] in 1896, reported a diverticulum in the upper end of the jejunum of a boy of 14. There was accessory pancreatic tissue at the apex of the sac. Hansemann also reported a case in which more than 400 diverticula could be counted in the digestive tract, most of them being located in the jejunum and upper part of the ileum.

In 1899, Jach[29] and Nichols[30] each reported a case of multiple diverticula of the small intestine.

Fischer,[31] in 1899, reported two cases: 1. In one, a piece of jejunum, 7.5 cm. long, showed a small oval diverticulum the size of a bean lying beneath the peritoneum between the folds of the mesentery. No other diverticula were found in the alimentary tract. Blood vessels ran over the serous covering of the diverticulum. 2. In the other case the first meter and a half of the ileum showed numerous large and small variously shaped diverticula, scattered along the mesenteric attachment. They varied in size from a split pea to half the diameter of the intestine. The larger sacs were often lobulated. There were large blood vessels running over their surfaces, the smaller ones looking as though blood vessels pierced their apexes or ran over their surfaces. There were signs of inflammation in the smaller diverticula. In all the sacs the muscular coat was very much thinned out, and in places entirely lacking.

Hodenpyl,[32] in 1901, presented a case in which the duodenum and the upper part of the jejunum exhibited a number of thin-walled cysts, originating in diverticula, the cysts varying in size from a pea to a hen's egg.

Gordinier and Sampson, in 1906, described a case which came to operation and which I have already referred to in detail.

Boker,[33] in 1912, reported a very interesting case with two diverticula of the duodenum, multiple diverticula of the colon and a pressure diverticulum of the urinary bladder, in addition to multiple diverticula of the small intestine. One of the small intestinal diverticula showed ulceration and necrosis of the wall with an encapsulated peritonitis resulting.

I have not found in the literature any case of jejunal or ileac diverticulosis (other than Meckel's) in which a diagnosis has been made with the roentgen rays; so far as I can learn, the five cases of my series, in two of which operation was performed, are the first recorded in which a diagnosis has been established with the roentgen rays, and two of them constitute the first cases in which the roentgen-ray findings have been corroborated by operative procedure. The three cases in which operation was not performed will not be given here; the other two cases follow:

Case 1 (No. 96388).—A man, aged 61, entered, April 25, 1915, giving a history of "indigestion" for the preceding ten months. He complained of a feeling of pressure and distention of the stomach coming on immediately after meals, causing much discomfort and distress, relieved somewhat by belching. There was no pain, no nausea, and no vomiting.

19. Bristow: Tr. Path. Soc. London **6**: 191, 1854.
20. Wallman: Virchows Arch. f. path. Anat. **14**: 202, 1858.
21. Klebs: Handbuch d. path. Anat. **1**: 271, 1869.
22. Moore, Norman: Tr. Path. Soc. London, 1884, p. 202.
23. Buchwald and Janicke: Ueber Darmcysten, Deutsch. med. Wchnschr., 1887, No. 40, p. 868.
24. Birch-Hirschfeld: Lehrb. d. path. Anat. **2**: 550, 1887.
25. Virchow: Verhandl. d. Berliner med. Gesellsch., 1890, p. 116.
26. Edel: Ueber erworbene Darmdivertikel, Virchows Arch. f. path. Anat. **138**: 347, 1894.
27. Seippel: Ueber erworbene Darmdivertikel, Diss., Zurich. p. 21.
28. Hansemann: Ueber die Entstehung falscher Darmdivertikel, Virchows Arch. f. path. Anat. **144**: 400, 1896.
29. Jach: Ueber Duodenaldivertikel, Diss., Kiel, 1899.
30. Nichols: Philadelphia M. J. **3**: 700, 1899.
31. Fischer: Acquired Diverticula of the Bowel, J. Exper. Med. **5**: 33, 1900.
32. Hodenpyl: Two Cases of Multiple Spurious Diverticula of the Intestine, Proc. New York Path. Soc., 1899-1900, p. 182.
33. Boker: Ein interessanter Fall von zahlreichen Divertikeln des gesamten Darmtractus und der Harnblase, Diss., Kiel, 1912.

He had occasional "heartburn" about 2 a. m. During the last six months he had a great deal of intestinal flatulence which he was not able to relieve.

Roentgen-ray examination, June 10, revealed a sacculation in the small intestine, located apparently a few centimeters below the duodenojejunal junction, wherein food collected, distending the bowel until its shadow was at least 5 cm. in diameter, and coinciding accurately with the seat of the patient's subjective pain. Even before the barium meal was given there was noted a definite gas accumulation in the small bowel occupying the left upper quadrant; and in the midst of this gas distention there could be made out a fluid level about 5 cm. in width surmounted by a gas bubble similar to the normal air pocket of the stomach. The emptying time of this sac was from eight to ten hours (Fig. 7).

June 15, at operation by Dr. J. H. Kellogg and myself, there were found in the upper jejunum perhaps a dozen diverticula, most of them pea sized, but including one large one measuring 5 cm. in diameter. The gallbladder, stomach, duodenum and pancreas all appeared to be normal. There were external signs of inflammation about the intestine in the neighborhood of the large diverticulum. We removed about 36 cm. of jejunum commencing 18 cm. below the duodenojejunal fold. The patient made prompt recovery from the operation, but it was several months before he admitted relief from the symptoms for which the operation was performed.

Dr. Warthin, in reviewing this specimen, reported changes indicative of chronic low-grade inflammation of the mucosa of the large sac, which was, however, devoid of muscularis. The sac was located between the folds of the mesentery and in close relation to the large blood vessels. It was interesting to note that this large sac was the last of a series of diverticula occurring in a relatively circumscribed segment of upper jejunum, 36 cm. in length, without any obvious signs of obstruction except the retention within the diverticulum itself. The segment of bowel removed is shown in Figure 8.

Fig. 9 (retouched).—Barium-filled multiple diverticula of jejunum, patient erect. Arrows point to gallstones clearly seen in original roentgenogram. Operative proof.

CASE 2 (No. 92181).—A man, aged 73, on entry, July 18, 1914, gave a typical history of gallbladder disease. Roentgen-ray examination revealed an extraordinary condition of the small intestine, twenty-five or thirty sacculations occurring throughout the jejunum and upper ileum. With the patient in the erect position the larger diverticula were characterized by numerous fluid levels, each surmounted by an air pocket. Following a barium meal these diverticula were beautifully accentuated (Fig. 9). Some of them measured 4 cm. in diameter. In addition there were shown multiple diverticula of the pelvic colon, and a large number of gallstones. This patient was later operated on at another institution, the gallstones removed, and the intestinal diverticula confirmed.

ABSTRACT OF DISCUSSION

DR. L. T. LEWALD, New York: I wish to corroborate what Dr. Case says about the difficulty of the surgeon always confirming the findings of diverticulum. I know of two cases, one in which the surgeon was unable to find the diverticulum, although there was no question of its presence, and in the other case, having been present at the time of the operation and following closely each step, he was able to disclose the diverticulum. In the one case the diverticulum was at the duodenojejunal junction. After carefully following the whole of the duodenum, and then the junction, the surgeon was able to identify the diverticulum. The question then arose as to what to do and nothing further was done than to confirm the finding of the diverticulum, inasmuch as there was no definite inflammation. Dr. Case, how do you arrive at the conclusion as to which cases are operative; also as to your ideas as to the etiology? You believe that the diverticula are congenital in the vast majority of the cases?

DR. L. J. HIRSCHMAN, Detroit: It is very important, after making a diagnosis of diverticulum roentgenologically, that every effort be made to confirm the diagnosis by operation. Several years ago when we did not know so much about how to disclose these small bowel conditions I came on a case with colon pathology in which I found a jejunal diverticulum, and an early commencing carcinoma involving the diverticulum. For that reason, I should urge that when a diverticulum of large size is found the case should be followed up and excision urged.

DR. A. A. STRAUSS, Chicago: One of the important factors in finding these diverticula at the time of operation is complete mobilization of the duodenum. Too many surgeons try to find these diverticula when they are located on the posterior wall of the duodenum, without mobilization. As to the treatment of such a lesion, amputation and inversion is the simplest, closing the defect produced by the excision, transversely to the long axis of the bowel, with interrupted sutures, and covering the area over with the free edge of the attached omentum. The symptomatology is similar to that of gallbladder disease or duodenal ulcer.

DR. W. H. STEWART, New York: As roentgenologists we are becoming more and more familiar with the findings in diverticula of the duodenum; consequently, there has been a very rapid increase in the number of cases observed. They are frequently detected incidentally during a gastro-intestinal examination. The majority of such cases apparently do not give any symptoms. I reported my first case in 1915; it was one of double diverticulum of the descending portion of the duodenum. In our early experience we found it quite difficult to differentiate between diverticulum and the ordinary perforating ulcer. The two important points to consider in differentiating these two conditions are: first, the history, and second, the presence or absence of deformity in the adjacent small intestine.

The question of dilatation of the ampulla of Vater is also important. Dr. Cole has reported a high percentage of cases of diverticula of the duodenum; this high percentage may be largely due to the fact that he included cases of dilatation of the ampulla of Vater under the heading of divericulum—I have never considered the former as a true diverticulum.

DR. FRANK SMITHIES, Chicago: The opinion has been expressed here several times this afternoon regarding the

symptomatology of intestinal diverticula that such resembles the symptomatology of ulcer, duodenal or gastric. When the history of some of these cases is carefully analyzed, I have never seen that the true symptomatology of ulcer was present. There was always the symptomatology of some vague upper alimentary tract disturbance, but it was not the clean cut ulcer dyspepsia type. The only sign that might be suggestive of ulcer is the possibility of an interference with the free progress of food, that is, an atypic form of stasis, out of harmony with the clinical history. I have seen many anomalies demonstrated by the roentgen ray as diverticulum of the duodenum or small intestine, but I think some of them were nothing more than localized spasms in dilated duodenums of jejuna. Also that some pictures exhibited as diverticula were nothing more than views of loops of small intestine overlapping other parts of the alimentary tract, and in these loops barium was retained longer than normally. Therefore, I think that Dr. Case is quite conservative when he insists that these cases should be followed through surgically and so proved up. Clinically, it seems to me that when one has such a type of bowel retention as I mentioned, the subject should be examined on several occasions in order to prove the constancy of these defects, and while studies are being made, he should be thoroughly saturated with atropin or belladonna to permit maximum relaxation of spasms of the intestine. Then if retention flecks are still present, we can properly assume the presence of some form of diverticulum.

DR. JAMES T. CASE, Battle Creek, Mich.: I emphasize all Dr. Smithies has said. These examinations should be repeated; I have repeated them as many as three or four times, at intervals of several days. I must insist that the examination be fluoroscopic, because with the fluoroscope one can turn the patient this way and that way and manipulate the bowel in such a way that we can demonstrate a definitely rounded shadow attached to, but not actually a part of the bowel, lying to one side and bearing a fixed relationship; we then know that we are dealing with a diverticulum. And in all cases in which we have operated, we have been able to find the diverticulum, unless it was one of those in the third portion buried in the pancreas substance. As to which are surgical cases: I believe they are all surgical. The patients come to us because they have symptoms. We may not be able to link the symptoms the patient exhibits with this condition; nevertheless, after a reasonable trial of other measures, when symptoms are not relieved, operation is indicated.

ACTINOMYCOSIS TREATED WITH METHYLENE BLUE AND ROENTGEN RAY

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AND
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ST. LOUIS

Methylene blue in the test tube is a specific for *Actinomyces*. Believing that it might prove beneficial when used in the human being infected with this organism, we used it in the case, a report of which follows. Furthermore, our experience induces us to urge the use of the roentgen ray when available, in this type of infection.

REPORT OF CASE

History.—A white woman, aged 24, pregnant, complained of an ulceration of the left side of her face. This began as a tooth-ache which followed picking of the teeth with broom-straws. An abscess resulted which was treated by extraction of the offending tooth. The swelling and pain in the gums extended to the cheek, from which, three weeks later, an ounce of pus was removed by an incision; but a second incision one week later failed to show more pus.

Physical Examination.—This was negative except for the finding of a full term pregnancy, and a lesion extending from the angle of the jaw about 2 inches into the neck, forward to the angle of the mouth, and upward to the maxillary process. It was copper-red, with multiple sinuses radiating from the center, and filled with pus. The jaw could be opened about 2 cm. There was an ulcerated area on the buccal membrane 2 cm. in diameter opposite the site of the first molar tooth, with marked induration but no sinuses or swelling of the gums and great tenderness only on pressure. The tongue could not be projected, but over its surface were many ulcerations and deep fissures.

Fig. 1.—Extent of lesion before treatment; triangular area, point of diagnostic tissue excision.

The urinalysis and repeated Wassermann tests were negative throughout the illness. The total white count averaged, during quiescence, about 8,000, with a normal differential count and no eosinophilia.

The roentgen-ray report by Dr. Sante read: "A dark area, which may be bone destruction, runs forward from the site of the extracted tooth, beneath the other teeth. This dark area may be definite bone destruction from an infective process. The cortex seems to have been involved and may be broken through further forward; however, periosteal irritation is lacking."

The presence of a fungoid infection was suggested by Dr. W. T. Coughlin, but a positive diagnosis was not made until scrapings from the sinuses examined for tissue excised for diagnostic purposes were repeatedly negative for *Actinomyces*.

Treatment and Course.—On the suggestion of Dr. Schery, methylene blue was given internally as well as being injected locally, the latter in 3 per cent. solution. The former was started with 2 grain doses three times a day, later increased to 5 grains four times daily. This therapy caused nausea, dizziness and weakness at first, but these symptoms soon disappeared. The local injection, though it apparently decreased the amount of suppuration, was hardly justifiable in view of the pain it caused, and furthermore it increased the outer zone of edema.

On the twelfth day of treatment the process flared up, involving the orbit and causing complete closure of the eye. The constitutional disturbance amounted to an average temperature of 101 F. for about four days, with a total white count of 12,000 and a differential count showing 96 per cent. polymorphonuclear leukocytes.

It was thought advisable to make use of the roentgen ray, and an erythema dose consisting of an exposure of two minutes to a 6 milliampere, 6 inch spark gap, with the skin target 10 inches distant without a filter except over the upper part, was used. This was followed by a cessation of the acute symptoms, and the local edema decreased. A few sinuses remained in the larger area, and two large abscesses formed just below the eye. These were incised and kept wide open. Eleven days after the use of the roentgen ray, the first sulphur granules were found, and the smear made from them was seen to contain *Actinomyces*.

The condition was thought to have reached its termination in both areas, when suddenly a second attack blazed forth. A second roentgen-ray treatment was applied with similar local and constitutional behavior, but the process receded so rapidly that on the forty-third day all treatment was stopped as all the sinuses, edema and induration had disappeared.

The copper-red color was gradually replaced by a yellow tinge. There then remained only a slight degree of contraction of the skin over the maxillary process. The patient at that time was able to open her mouth to nearly normal distance, and had no pain or other discomfort. The final roentgen-ray report stated that there was now no visible injury to the left lower jaw.

COMMENT

Dr. Schery suggested the use of methylene blue as the treatment in this case, hoping that it would be a specific in the human body, as it is for *Actinomyces* in mediums outside of the body. This advice was based on the statement [1] that one drop of a 1 per cent. methylene blue solution in 10 c.c. of broth culture kills the organism of *Actinomyces*. In order that this drug should be effective in vivo, it was decided that it should be given in a quantity theoretically large enough to be in the circulation in the same concentration as in vitro; and this was calculated to be about 5 grains. This concentration was kept so by intermittent administration four times daily. This was done on the assumption that all the drug given was absorbed, dissolved in the circulating fluid, and distributed equally in all the tissues. Attempts to measure the concentration of the methylene blue in the blood serum of the patient by colorimetric methods obtained at the end of the first, second and third hour after taking the drug proved negative. This serum was taken during the terminal stage of the treatment when the tissues must have been saturated, for the urine was constantly a deep blue, and the feces a deep green. The patient's skin was a peculiar shade of gray, which disappeared on the fourth day after the drug was discontinued. At this time the urine was still dark green, indicating that some of the dye was still retained by the tissues, and that during its circulation it was probably held in some

Fig. 2.—Spreading of lesion to the orbit on the twelfth day of treatment.

combination by the blood constituents and liberated by the renal epithelium. Blood agar plates made from the whole blood and cultivated with bacteria showed growth but no pigmentary changes. These cultures were controlled by normal blood agar plates. This indicates that the dye was not present in such a state or concentration as to prevent bacterial growth, and secondly that the dye, if present, could not be liberated by the bacteria used, a pure culture of *B. coli*.

It was planned to control the effect of the roentgen ray by exposing growths of the fungus to the ray; but unfortunately no growth was obtained from the sinus scrapings or from the granules. This may have been due to the germicidal effect of the methylene blue in the tissues. The effort to measure the effect of the dye by experimental means in this case failed. What were the effects as measured by clinical observation? The local injection appeared to have an inhibitory effect on the production of the sinuses, the number of which indicates the virility of the fungus This method proved too painful to be justifiable even for the results obtained, when used in a way to give results. To use it in any other degree would be trifling, as either way the patient deserves consideration. During the process of the dye medication alone, a flaring up of the lesion took place, the second exacerbation after the use of the roentgen ray. Apparently from this behavior alone, the action of the dye was not of that absolute action which one would desire to see in a specific remedy, but nevertheless it cannot be condemned as useless.

Fig. 3.—Condition of face on termination of treatment.

Reading the literature, one becomes doubtful as to the specificity of drugs, having in mind particularly the iodids. Abroad,[2] they are advised in large doses, consisting of 15 grains three times a day; but this apparently is not sufficient for the American variety of *Actinomyces*, for here [3] they are advocated to the limit of tolerance. Given alone they have proved unsatisfactory, and consequently combined treatment [4] with the roentgen ray has been resorted to and reported successful.

Copper sulphate has been suggested and used,[5] but it also apparently could not be trusted to fight the battle alone, for a combined treatment of copper sulphate and the roentgen ray soon appeared.[6]

The dissatisfaction with iodids by oral administration alone led one writer [7] to combine this with local injection of the same drug, with remarkable results; but experimental evidence that the mycelium is capable

1. Besson, A.: Practical Bacteriology, Microbiology and Serum Therapy. New York, Longmans, Green & Co., 1913, p. 660.

2. Dean, C. W.: A Case of Actinomycosis Treated by Vaccine, Brit. M. J. **1**: 82 (Jan. 20) 1917.
3. Ormsby, O. S.: Diseases of the Skin, Philadelphia, Lea & Febiger, 1916, p. 924.
4. Harris: Actinomycosis of the Neck, J. Cutan. Dis. **34**: 616, 1916.
5. Bevan, A. D.: Treatment of Actinomycosis and Blastomycosis with Copper Salts, J. A. M. A. **45**: 1492 (Nov. 11) 1905.
6. Zeisler, J.: Notes on a Case of Actinomycosis, J. Cutan. Dis. **22**: 510, 1906.
7. Sawyers, J. L.: Medical Treatment of Actinomycosis, J. A. M. A. **36**: 1314 (May 11) 1901.

of growing in 2 per cent. solutions of potassium iodid is not encouraging. The iodids, however, are not to be banished entirely, for recently [8] they have been combined with arsphenamin and reported successful in a case not yet terminated. The usefulness of the iodids may be due to the fact that not all lesions resembling actinomycosis are actinomycotic, and that few writers report a positive diagnosis. Furthermore, it is probable that not all actual actinomycotic infections are equally virulent.

Specific vaccines [9] have been reported efficient both here and abroad, although the utility of this method was doubted by earlier writers,[10] because they could demonstrate no antibody content of the blood.

More recently,[11] radium alone has been used in a number of cases with unquestionable efficiency. Keeping this in mind and remembering that treatments consisting of the roentgen ray plus some other agent, iodids or in this case methylene blue, have proved successful in a short time, our opinion is that the roentgen ray or radium alone will be the agent of choice in the future.

PATHOLOGY

The parasite belongs in the genus *Hyphomyces*, of which *Discomyces bovis*, among ten others which have been described, is the most common. The whole group is classified as streptothrices and belongs in the group of *Oosporidae*. They are fungi consisting of branched septate mycelia, and reproduction takes place by rounded conidia.

The parasite stains with basic anilin dyes, and is gram positive and acid fast. An important point in its morphology is that in the early stages clubs are not formed, and it is not until considerable resistance to its growth is manifest in the tissues of the host that clubs do form. Much confusion exists in the minds of most clinicians in regard to this parasite, owing to the error of supposing that the organism is isomorphic in man and animal. Most students are familiar with the classical textbook picture of the fungus with its radial fibers and clubs; but, as a matter of fact, bovine and human lesions differ in that the bovine lesion shows clubs and the human lesion does not. This undoubtedly is due to the partial immunity in the bovine and its absence in the human being. With these morphologic differences there are also those of its staining reactions. The filaments stain by Ziehl's and Gram's method. The clubs stain yellow with picrocarmin on a pink background of cells.

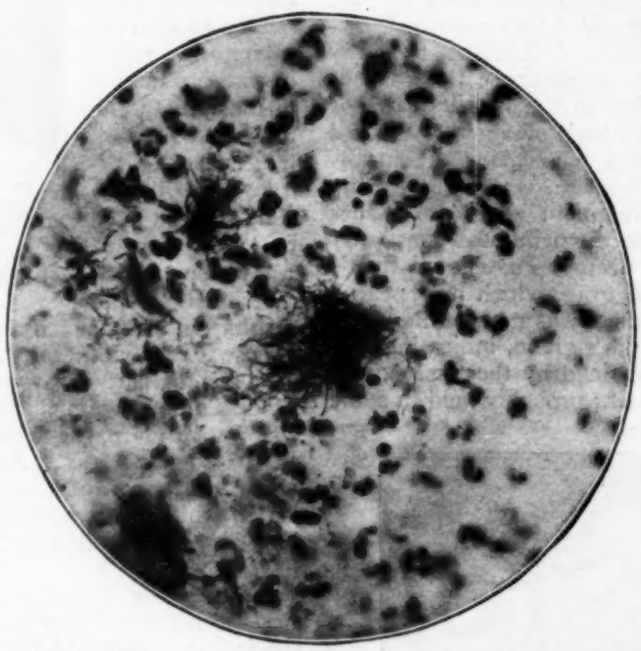

Fig. 4.—Photomicrograph taken from direct smear from sinus scraping; Gram's stain.

The lesions occur in the jaw in about 50 per cent. of the cases; in the abdomen in 20 per cent. and in the thorax in 15 per cent. The mortality in the jaw cases is stated to be between 25 and 40 per cent., and in the abdominal and thoracic cases from 70 to 80 per cent. Frequently the lesions are mistaken at necropsy for tuberculosis.

The material submitted for examination in this case was very scant, and staining methods were relied on exclusively for identification. The pus contained minute yellowish granules about 0.25 to 0.5 mm. in size. These were crushed between slides, which were then drawn apart. One slide was stained by Gram's method and the other by Ziehl's. The parasites were seen on both slides, but the Gram stain proved superior. The organism was seen as gram-positive septate mycelia, varying in length and mass, of which some branched. There was no clubbing, and there were no other organisms present.

More than twenty tubes of various mediums were inoculated. At this time treatment had already been started; the material for cultures was very scant; and because scraping of the sinuses was so painful, satisfactory material could not be obtained. All of the cultures proved to be negative, and almost all showed a luxuriant bacterial growth long before the parasite could have been expected to appear. The tissue removed for diagnosis was carefully examined by all means of staining, but the parasite could not be demonstrated. On examining the patient it was seen that the tissue had been removed from the center of the lesion, the least desirable site. *Actinomyces* could be demonstrated in the scrapings from the sinuses.

SUMMARY

1. Combined treatment, consisting of methylene blue and the roentgen ray, is new in the literature.
2. Combined treatment, of which the roentgen ray is a part, clears up the condition.
3. Either roentgen ray or radium is probably sufficient by itself as a curative agent.

8. Torres, O.: Actinomycosis Treated with Sodium Iodide and Arsphenamin, Brazil.-med. **33**: 361 (Nov. 15) 1919.
9. Wynn, William: A Case of Actinomycosis of the Lung and Liver Treated Successfully with Vaccine, Brit. M. J. **1**: 554, 1908. Kinnicutt and Mixter: Actinomycosis Treated with Vaccine, Boston M. & S. J. **167**: 90, 1912.
10. Harbitz and Grondahl: Actinomycosis in Norway, Am. J. M. Sc. **2**: 395, 1911.
11. Heyerdahl, S. A.: Actinomycosis Treated with Radium, J. A. M. A. **73**: 1928 (Dec. 27) 1919.

Breathing Rock Dust.—The United States Public Health Service has made a survey of factories in the United States located at Niagara Falls, N. Y., at which abrasives, chemicals, gases, electrodes, carbon, metals, and aloids are made. In the course of this survey it was found that more than 200,000,000 particles of fine dust are breathed into the lungs and air passages with every cubic foot of air in such factories. Work under such conditions invites respiratory diseases and constitutes a real health hazard, and exposes the laborers to dangers which would eventually result in their becoming incapacitated. As a result of the survey, industrial hygiene engineers have devised means of removing the dust from the air and minimizing the fumes and poisonous gases.

THE DEVELOPMENTAL BASIS FOR CERTAIN VESICAL DIVERTICULA *

ERNEST M. WATSON, A.M., M.D.

BUFFALO

Concerning the causative factors involved in the formation of vesical diverticula, there is still much difference of opinion. One group of observers holds that these saclike appendages of the vesical cavity, varying in size from a small bean to several times the size of the urinary bladder, are always of congenital origin. The words of Cabot [1] express this view tersely: "The word diverticula is confined to those pounches, always of congenital origin, occurring most frequently in certain localities of the bladder, but occasionally seen in almost any portion and not due to defective development or lack of closure of any recognized structure." Another view places the causative factor of obstruction along the lower urinary tract of paramount importance in the etiology of vesical diverticula. Lower,[2] from his studies of numerous cases clinically, states that in his opinion these saclike evaginations are practically always acquired. Thomas,[3] in a study of the cases observed at the Mayo Clinic, holds that only in a few cases can a defective development account for the pathology, and further that acquired factors (namely, obstruction in 86 per cent. of his cases) seem necessary for the development of diverticula clinically.

From the present very definitely divided opinion as to the formation of vesical diverticula, it can be seen that further study is needed before a true understanding of their etiology can be reached. With this in mind the following observations are presented. In the last few years, in the study of the development of several portions of the lower genito-urinary tract,[4] it has been possible to observe the vesical cavity in its progressive development from early fetal life until birth. In the course of these studies, certain pictures of the bladder cavity have been of striking significance, and it appears that certain factors are present which may be of importance in determining the formation of diverticula.

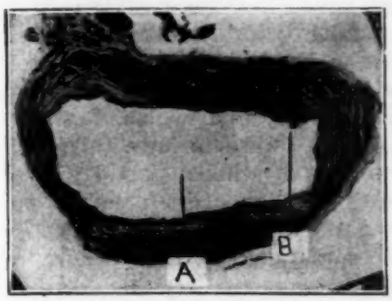

Fig. 1.—Cross-section of fetal bladder: *A*, bladder cavity; *B*, evagination of the bladder mucosa.

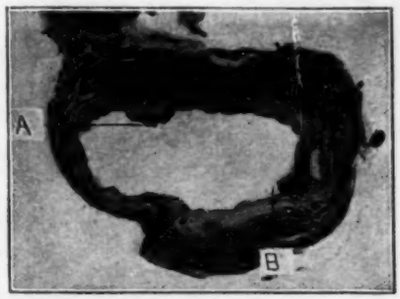

Fig. 2.—Cross-section of fetal bladder: *A*, outpushing of mucosa and submucosa along the lateral margin of the trigon; *B*, outpushing of the mucosa, submucosa and a portion of the muscular layer along the lateral margin of the trigon.

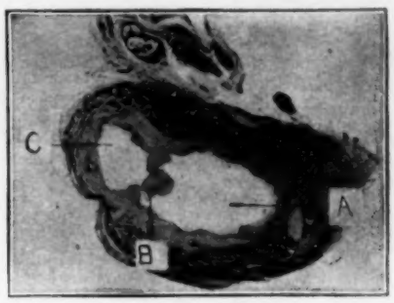

Fig. 3.—Cross-section of fetal bladder: *A*, bladder cavity; *B*, fold of mucosa and submucosa almost bridging the vesical cavity; *C*, cavity of a diverticulum in the process of formation.

The variation and inequality of the intrapelvic and lower abdominal pressure has been noted in a considerable number of fetuses studied. This has caused the bladder at times to become somewhat distorted and the inner walls of the bladder to become extremely irregular, with ridgelike elevations standing out prominently in several areas of the cavity, but more particularly in the zone about the lateral margins of the trigon. These irregularities, augmented by the general processes of growth, may project into the vesical cavity as definite finger-like invaginations, or the projections may remain as simple elevated ridges which never develop sufficiently to bridge the lumen of the bladder. If the intrapelvic pressure becomes of real significance early in fetal life, the probability of a bridging of the vesical cavity is much more imminent than when it develops

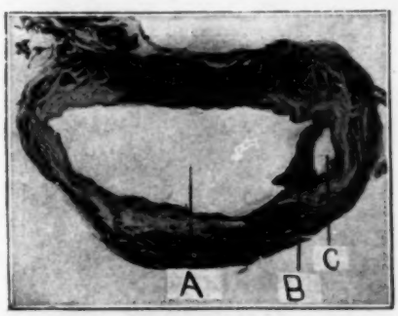

Fig. 4.—Cross-section of fetal bladder: *A*, bladder cavity; *B*, bridge of tissue composed of mucosa, submucosa and some muscular fibers bridging the vesical cavity and attached to the opposite bladder wall (outline of the mucous covering still intact); *C*, cavity of the diverticulum.

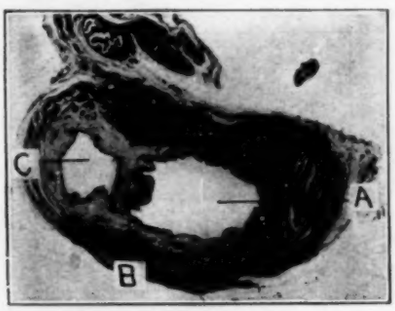

Fig. 5.—Cross-section of fetal bladder: *A*, bladder cavity; *B*, firm bridge of tissue spanning the vesical cavity; *C*, cavity of the diverticulum.

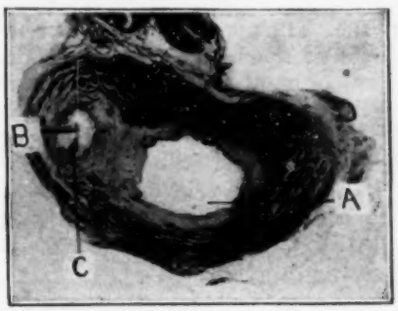

Fig. 6.—Cross-section of fetal bladder: *A*, bladder cavity; *B*, cavity of the diverticulum; *C*, evaginating mucosa within the diverticulum.

* Read before the Section on Urology at the Seventy-First Annual Session of the American Medical Association, New Orleans, April, 1920.

* From the Department of Urology, University of Buffalo, Department of Medicine, and the Urological Service of the Buffalo City Hospital.

1. Cabot: Boston M. & S. J. **172**: 300, 1915.
2. Lower, W. E.: Diverticula of the Urinary Bladder, J. A. M. A. **63**: 2015 (Dec. 5) 1914.
3. Thomas: Surg., Gynec. & Obst. **33**: 378 (Oct.) 1916.
4. Watson, E. M.: Am. J. Anat. **24**: 395 (Nov.) 1918; Bull. Johns Hopkins Hosp. **29**: 241 (Nov.) 1918.

during the later months of intra-uterine life. Varying degrees of these irregularities have been demonstrated in the specimens studied, from a simple ridgelike elevation to those which traverse the entire vesical cavity and touch the mucosa of the opposite bladder wall. In certain instances, when the pressure is more lateral they may form bridges along the same side of the bladder from which they originate. When these fingerlike projections traverse the bladder cavity and touch the mucosa of the opposite side, certain regressive changes occur in the approximating mucosa, as indicated in the poor staining qualities of the epithelium and later by a disintegration of the lining cells which allows the mucosa and a portion of the muscularis of two portions of the blader wall to lie in apposition.

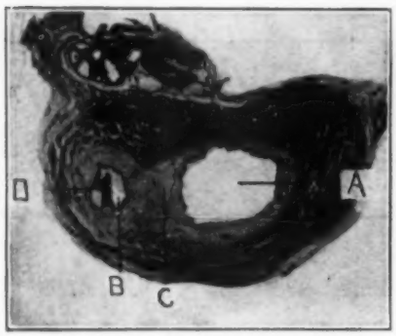

Fig. 7.—Cross-section of fetal bladder: *A*, bladder cavity; *B*, cavity of the diverticulum; *C*, firm bridge of tissue separating the bladder cavity from the cavity of the diverticulum; *D*, bridge of mucosa and submucosa dividing the cavity of the diverticulum, but not as yet attached to the opposite wall.

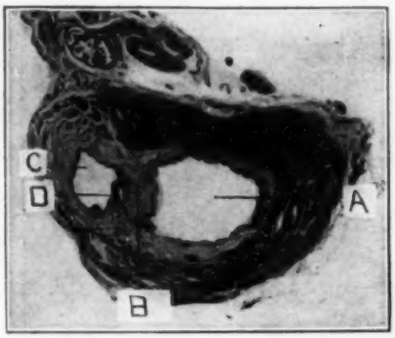

Fig. 8.—Cross-section of fetal bladder: *A*, bladder cavity; *B*, bridge of tissue traversing the bladder cavity; *C*, cavity of diverticulum; *D*, bridge of tissue dividing the cavity of the diverticulum and firmly attached to the opposite side.

The site of transition from the trigon, with its thick musculature and its covering of many layers of epithelial cells, to the lateral bladder wall with only two or three layers of epithelial cells is prone to produce a ridgelike demarcation which readily lends itself to the formation of an excess of epithelial tissue. The apposition then of two surfaces of the bladder wall dénuded of epithelium, at a time when true formative growth is active, results first in adhesions and later in a true attachment of a bridge of tissue across a portion of the vesical cavity. The growing submucosa and muscularis become continuous from the fingerlike evaginations with that of the opposite side, and in the older specimens this ridge of tissue is shown to contain all three layers of the muscular coats of the bladder. The mucosa in its growth then becomes continuous from the fingerlike evaginations with that of the opposite bladder wall, and there is formed a true pocket within the bladder, the walls of which have all the essential elements of the true bladder wall, namely, the three muscular coats, the submucosa and the mucosa.

With the foregoing developmental setting there may be several factors which influence the size of the diverticulum at birth, namely, if true attachment occurs early in fetal life the size of the diverticulum at birth may be much larger, its lumen larger and its capacity greater than if the bridging of the vesical cavity occurred late in intra-uterine life. The finding of most diverticula in the region of the ureteral orifices, it seems, may be explained more as a relationship to the margins of the trigon than to the ureteral orifices themselves. The trigon during intra-uterine life is covered by from three or four to seven or eight layers of epithelial cells, some of which, as they become thinned out in their transition to join the lateral bladder walls, show a greater tendency to project as slight, ridgelike elevations than do any other portions of the bladder wall.

That it is possible to have a developmental basis for pouches of the urinary canal has been shown in the formation of certain valves of the posterior urethra which gives a pouchlike dilatation of the urethra in the prostatic portion, and which formations have been shown to have their origin from the attachment and continued growth of the tip of the verumontanum to the roof of the urethra. In view of these conditions, it seems not improbable that certain vesical diverticula may have a similar origin. It is believed, however, that their clinical recognition during adult life is hastened and their dimensions greatly increased by any of the factors that would bring about increased vesical distention or increased activity of the bladder musculature.

494 Franklin Street.

ABSTRACT OF DISCUSSION

DR. VICTOR D. LESPINASSE, Chicago: Dr. Watson's demonstration is the first I have seen of the development of bladder diverticula in the fetus.

DR. WILLIAM E. LOWER, Cleveland: This exhibition of Dr. Watson's is the strongest presentation of the development of bladder diverticula that I have ever seen.

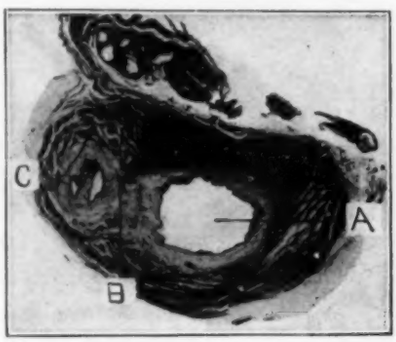

Fig. 9.—Cross-section of fetal bladder: *A*, bladder cavity; *B*, bridge of tissue containing mucosa, submucosa and muscular fibers now forming the lateral bladder wall; *C*, cross-section of two cavities, i. e., a diverticulum within a diverticulum.

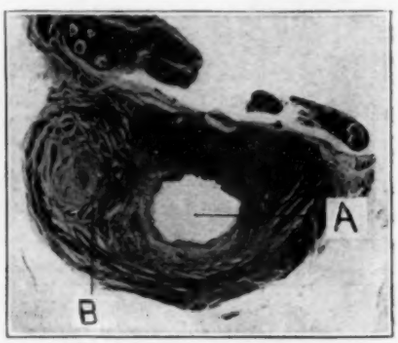

Fig. 10.—Cross-section of the preceding specimen below the level of the diverticulum: *A*, bladder cavity; *B*, area of fibrosis from the lower pole of the diverticulum.

DR. ERNEST M. WATSON, Buffalo: The question of determining the etiology of diverticula is one of considerable importance clinically. The presentation of this study seemed indicated in bearing out the opinions of certain workers that the congenital factors are of considerable significance. The reason for not finding more diverticula early in life is unquestionably because of the fact that their presence gives symptoms only when accompanied by other factors, which increase the size of the diverticula; namely, urethral obstruction or obstruction at the vesical orifice, and these later factors occur usually in adult life.

HEMORRHOIDECTOMY

A COMPOSITE OPERATION *

E. G. MARTIN, M.D.
Associate Proctologist, Harper Hospital
DETROIT

Time, that great indefinite period through which all things worth while have developed, has given us, through the agency and experience of many surgeons, a technic which I am pleased to call a composite operation.

In presenting this very simple technic, I wish to state frankly that there has been no hesitancy in incorporating or modifying steps that excel, from the technic of others, nor in using and advocating such a clever instrument as the battle ax forceps. Adverse criticism of the numerous and varied surgical methods is studiously avoided as unreasonable and unnecessary; the advocacy of the composite technic, with the very definite reasons for its various steps, discloses my preference. May it be suggested that this technic is as applicable in general as in local anesthesia. The local

Fig. 1.—Deep injection, or blocking off, is made through an iodin spot.

anesthesia is described as Step 1, since it is believed that with very careful antiseptic preparation, it is to be preferred for the great majority of patients.

Free catharsis and a light diet are prescribed during the twenty-four hours before entering the hospital, and a good night's rest is assured by a mild hypnotic after entering. Following an enema on the morning of operation, two doses of morphin, 1/8 grain, and scopolamin, 1/200 grain, are administered; the first, one hour, and the second, one-half hour prior to operation.

With the patient lying in the left lateral Sims position on a comfortable mattress, the buttocks, perianal and anal regions are thoroughly cleansed with soap and water, followed by the application of iodin, alcohol and sterile water.

PROCEDURE

Step 1: The buttocks are retracted by an assistant, and a 1 per cent. solution of sterile procain or its equivalent is injected under the skin, about 1½ inches posterior to the anus; the injection is continued as the 2½ inch needle penetrates deeply into the sphincter ani laterally, where about one-half ounce of solution is deposited; the needle is nearly withdrawn, and the opposite side of the sphincter is similarly injected. Again, with the needle nearly withdrawn, the subcutaneous and submucous areas are injected under the hemorrhoids and around the anal canal. This last injection, done deliberately, and without distending or distorting the field, is carried with the long needle laterally on each side of the anus to the anterior quadrant. If this technic is followed, the sensory nerves

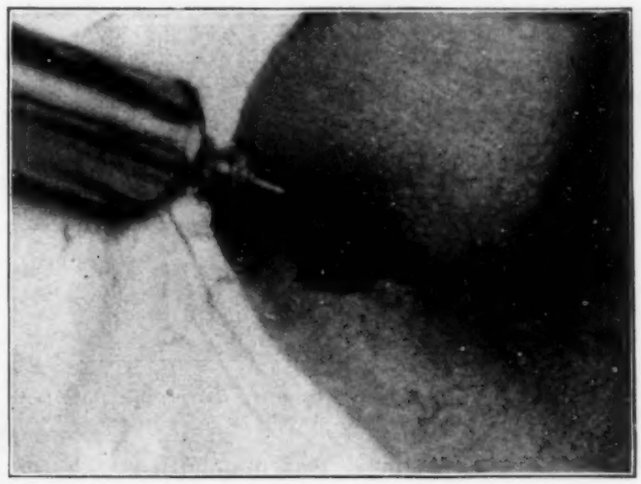

Fig. 2.—Superficial perianal injection without distention through the same puncture wound.

supplying the anal sphincter, anal canal and perianal skin are desensitized, and anesthesia is complete. We now have an anal sphincter ready for any necessary dilatation, and an undistorted operative field presents the hemorrhoids for radical removal.

Step 2: After dilatation, which is a matter of choice and is used as an aid to further preparation, the rectum is thoroughly mopped out with a 0.5 per cent. cresol solution, a bivalve speculum having been introduced; following this a dry sponge is placed beyond the internal sphincter to prevent soiling of the operative field. An anal retractor may now be used if desired, to expedite better vision; the hemorrhoid is carefully grasped with the battle ax forceps and drawn out tensely, care being used not to traumatize unnecessarily the anal mucous membrane and skin.

Fig. 3.—Anal retractor inserted; hemorrhoid grasped and pulled out with hemorrhoid forceps.

Step 3: An artery forceps is clamped above the hemorrhoid: the battle ax is substituted for a sharp toothed dressing forceps to facilitate more accurate treatment, when the redundant part of the pile is cut away; again using the toothed forceps, all hemorrhoid tissue below the anal surface in this region is dissected out with pointed lateral curved scissors.

I differentiate the pile from the hemorrhoid in that the pile is the tumor, and the hemorrhoid the tumor plus any and all hemorrhoid structure below the anal surface.

* Read before the Section on Gastro-Enterology and Proctology at the Seventy-First Annual Session of the American Medical Association, New Orleans, April, 1920.

Step 4: If the blood supply has not been controlled by the artery forceps, as evidenced after the removal of the hemorrhoid, a second pair of forceps is placed to control it before introducing and tying the catgut ligature above; this introduction is accomplished either with a blunt needle or ligature carrier, though it is permissible to use a sharp pointed needle, with the risk of puncturing a blood vessel. This ligature may be introduced with a ligature carrier after the pile is first grasped and drawn down and before the hemorrhoid is

Fig. 4.—Blood supply controlled by artery forceps; pile about to be excised with scissors.

removed. I have found that quite often with this method it is necessary to introduce a second suture to control bleeding, and suggest the forceps to assure hemorrhage control before ligation. It should here be noted particularly that no suturing is done for approximation. This technic is carried out and completed successively with each hemorrhoid, after which the parts are sponged, the gauze removed from the rectum, and a small rubber tube about one-fourth inch in diameter inserted through the anal canal into the rectum: this tube drains any accumulation of fluid from the rectum, and should be removed, for the patient's comfort, at the end of the day.

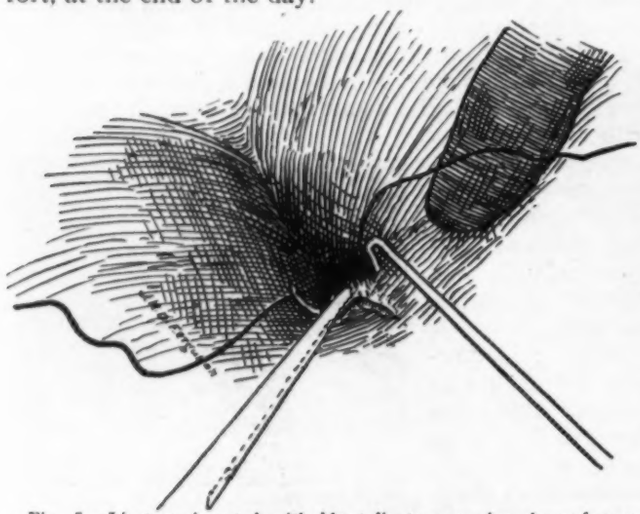

Fig. 5.—Ligature inserted with blunt ligature carrier above forceps.

AFTER-CARE

Postoperative pain is satisfactorily controlled by the hypodermic administration of morphin, 1/6 grain, repeated every three hours for six doses; and barring some contraindication, it is used as a routine. Light fluids are given for three full days, after which the bowels are opened by a warm oil enema, followed in one-half hour by a saline enema; soap is avoided. Following evacuation, hot sitz baths are of value and much appreciated by the patient. Daily saline enemas are prescribed until the anal distress moderates, after which mild cathartics are depended upon. The desirable stay in the hospital is five days.

In the composite operation, I would call attention to the one point of entrance for the local anesthesia: this reduces to a minimum the introduction of possible infection; the undistorted field of operation is also an advantage to be desired. Unnecessary traumatization of the tissues is of marked advantage in avoiding tags. The shutting off of both afferent and efferent blood vessels before removal of the hemorrhoid is believed to be effectual in preventing emboli. Nonsuturing for approximation avoids a possible abscess formation, with the occasional sequela phlebitis, since infection in an unsutured wound remains superficial and quickly heals.

This operation can be performed with accuracy, speed and safety—without trauma and without pain.

1447 David Whitney Building.

ABSTRACT OF DISCUSSION

Dr. James A. Duncan, Toledo, Ohio: There is hardly any excuse for any of these operations. There is not an internal hemorrhoid that cannot be cured with the actual cautery,

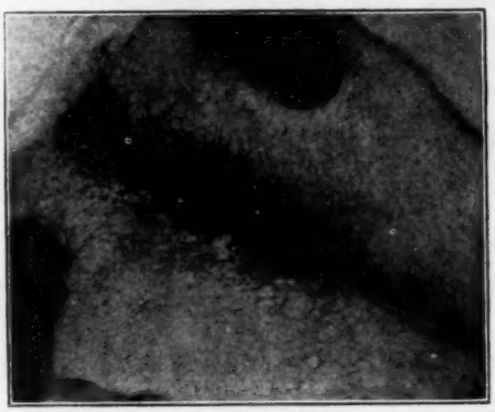

Fig. 6.—Ligature has been tied and cut off; operation completed. A fissure was excised and the sphincter incised in the posterior quadrant as evidenced in the illustration.

without any anesthetic, either local or general, no matter of how long standing.

Dr. J. Rawson Pennington, Chicago: The operation described by Dr. Martin is the ordinary ligature operation for hemorrhoids, though couched in a little different language. Since many cases of hemorrhoids are of the infective variety, any closed operation, whether it be the ligature, clamp and cautery, or what not, that closes in the infected base is not to be commended. Tonsils which are usually infective are removed by means of an open operation, and hemorrhoids which are also frequently infective should, for the same reasons, be removed by a similar method—an open operation.

Dr. John J. Gilbride, Philadelphia: There is an operation that has been performed by Dr. Laplace of Philadelphia for a number of years—suturing after excising the hemorrhoid. After the sphincter has been dilated with the patient under a general anesthetic, one picks up with forceps both the apex and the base of the hemorrhoid. Cut away the hemorrhoid and suture the mucous membrane. When the surfaces of the wound are apposed, there is no hemorrhage, and the results have always been splendid. The patient is allowed out of bed the day following the operation, and the day following that he goes home.

Dr. Edward G. Martin, Detroit: The use of the cautery is an unsurgical procedure precipitating slow convalescence,

and its use is frequently followed by anal contracture, and so-called return of the hemorrhoids. Dr. Pennington's remarks disposing of the composite operation for hemorrhoids as a "ligature operation," discloses his preoccupation during its reading. The only ligature used is placed well above the hemorrhoid area and controls bleeding during and following the operation, as well as offering the only possible prevention of emboli being carried back through the blood vessels. Dr. Pennington, in his method of everting the anal mucous membrane by the use of clamps, unnecessarily traumatizes the tissues, and often with the result of very annoying postoperative tags. There is one good point in his technic—which I have adopted and emphasized in my paper—the opened areas are not sutured. "Enucleation," which he referred to, is an excellent word, and the technic was clearly described as a part of the composite operation. Postoperative pain is negligible if the described postoperative treatment is followed.

GONORRHEA OF THE LOWER GENITO-URINARY TRACT IN WOMEN

WITH SPECIAL REFERENCE TO THE GLANDS OF BARTHOLIN *

WILLIAM E. STEVENS, M.D.
AND
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SAN FRANCISCO

There is probably no disease with which the human race is afflicted that is more often neglected than gonorrhea of the lower genito-urinary tract in women. The probable reasons for this are, first, the absence or mildness of subjective symptoms in its chronic stage and, second, the unsatisfactory results that so often follow the treatment of these cases. The statement has been made, and we believe it to be correct, that gonorrhea and syphilis are responsible for more deaths than tuberculosis and pneumonia; and when we stop to consider the enormous number of women suffering from gonorrheal infection and its far reaching and disastrous effects on male and female, there is surely sufficient incentive for a more determined effort to bring about its eradication. By curing these patients early while the infection is limited to the lower genito-urinary tract, involvement of the pelvic organs with its unfortunate sequelae will be prevented and, of still greater importance, much will be accomplished toward preventing the continual dissemination of this disease.

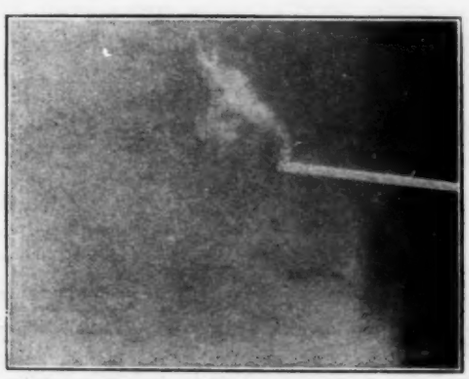

Fig. 1.—Normal gland of Bartholin.

Realizing these facts, Dr. William C. Hassler, health officer, with the consent of the San Francisco Board of Health, established a diagnostic clinic where prostitutes and other delinquents are examined, venereal clinics where those suffering from gonorrhea and syphilis may receive proper treatment without charge, and a large ward in the San Francisco County Hospital where the former patients are held under restraint until cured. As the period of detention depends on freedom from infection, a spirit of cooperation is manifested as a result of which an unusual opportunity is afforded us of observing the effects of systematic treatment.

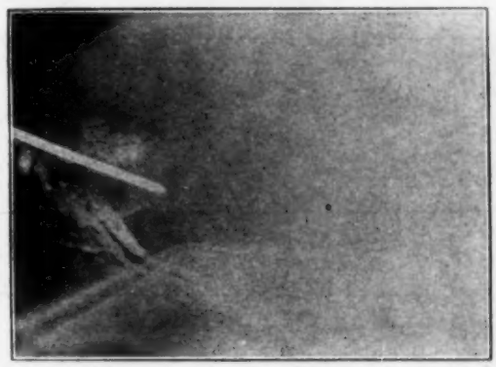

Fig. 2.—Normal gland of Bartholin (duplication caused by a crease in the film).

To date, 3,439 examinations have been made and chronic gonorrheal infection found in 1,496, or approximately 43.5 per cent. In the first 2,375 cases the diagnosis of gonorrhea was based on the detection of the organism in the smears or the presence of a ++ or +++ positive complement fixation test, together with characteristic clinical findings. Many cases were doubtlessly overlooked even in those subjected to repeated examinations; for the difficulty of detection of gonococci in women, especially in chronic infections, is universally recognized, and the fallibility of the complement fixation test in its present form is likewise understood. In the last 1,064 examinations positive clinical findings were usually considered sufficient evidence of gonorrhea in these patients. The correctness of this assumption was justified by the discovery of the gram-negative organisms in approximately 95 per cent. of these patients at some time during their stay in the hospital. The infection was located in the cervix in approximately 47 per cent., in the urethra in 32 per cent., and in one or both Bartholin glands in 23 per cent. of these cases. Smears from the vagina were never positive in the absence of infection of the cervix. In the presence of cervical infection the complement fixation test for gonorrhea was positive in approximately 59 per cent., in urethral infection in 23 per cent., and in bartholinitis in 19 per cent. of these patients. In the last fifty patients examined, however, the complement fixation test was positive in every case regardless of the location of the infection. The same type of antigen was used in all.

Because of the fact that, unlike acute gonorrhea, chronic infection of the genito-urinary tract in women is seldom productive of subjective symptoms, reliance must be placed almost entirely on objective symptoms for a diagnosis. Very few cases of acute gonorrhea were found in this series of examinations.

ENDOCERVICITIS

As will be seen by the foregoing figures, gonorrheal infection was most frequently found in the cervix, this

* Read before the Section on Urology at the Seventy-First Annual Session of the American Medical Association, New Orleans, April, 1920.

structure being involved in 47 per cent. of our positive cases. Smears were obtained after thoroughly cleansing the canal and compressing the anterior and posterior lips between the blades of a bivalve speculum. Gonococci are more frequently demonstrated following the traumatism caused by this procedure. In fifty clinically positive cervices in which gonococci could not be demonstrated at the first examination, staphylococci were the predominating organisms in thirty-six, various diplococci in twenty-nine, streptococci in nine, diplobacilli in two, and other bacilli in seven.

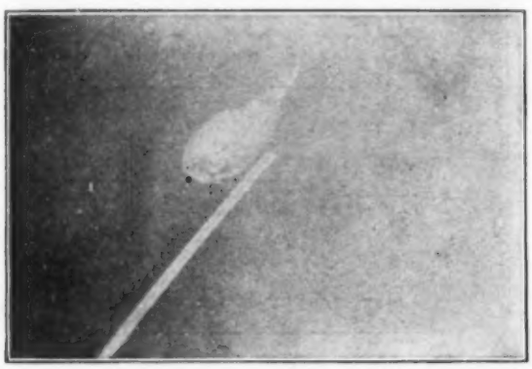

Fig. 3.—Dilatation of duct of Bartholin gland.

In the treatment of endocervicitis we have obtained good results in some cases following the application of 25 per cent. solution of silver nitrate twice weekly in conjunction with heat applied by means of prolonged vaginal douches, as much as 4 gallons of very hot water being used in this manner night and morning. Of much greater value, however, is proper cauterization of the cervix. This may be repeated two or three times if necessary, and in the absence of infection higher up may be depended on to cure the majority of cases. Sixty per cent. of our patients without demonstrable pelvic involvement were free from infection following this procedure. We have not used radium, but consider it worthy of trial in selected cases.

URETHRITIS

Gonococci were detected in smears from the urethra in about one third of our positive cases. Other organisms present were, in the order of their frequency, gram-positive diplococci, staphylococci, streptococci, diplobacilli and other bacilli. Of importance in this connection is the tendency of certain gram-negative organisms to change their staining characteristics and become gram-positive.

As Skene's or other glands near the meatus are usually infected, the necessity for a careful examination of these structures is important not only from a diagnostic but also from a therapeutic standpoint because of the fact that, following the elimination of these foci, the urethritis as a rule clears up rapidly. When no discharge is visible macroscopically, the two glass test and urethroscopy are of decided value in the diagnosis of urethritis, and advantage of these measures should be taken in all cases.

In the absence of complications, acute urethritis usually disappears rapidly under rest, bland diet, oil of sandal wood, large quantities of water internally, and drugs rendering the urine alkaline. Chronicity is usually due to glandular infection or stricture at the meatus or within the canal. The frequency of these complications is not generally appreciated, as the glands even when infected are not always easy to find, and examination of the urethra for strictures is often omitted. The skenoscope, which is a recent addition to our diagnostic armamentarium, is of great value in both the examination and treatment of Skene's glands, and a filiform bougie is useful in determining the location and depth of these structures.

Strictures at the meatus or within the canal are best detected by means of bulbous bougies. This complication, like infection of Skene's glands, occurs more frequently than is generally supposed. It was present in 58 per cent. of our cases.

In the treatment of chronic urethritis, instillation of from 1 to 3 per cent. solutions of silver nitrate, and local application of stronger solutions of the same drug through a short female endoscope are useful in the absence of glandular involvement or strictures; but acriflavine and mercurochrome, which at first seemed promising, proved of little permanent value. Infected ducts and glands should be destroyed, best by the actual cautery or fulguration electrode introduced through a skenoscope. Strictures should be dilated or incised.

GLANDS OF BARTHOLIN

The most interesting part of our work in this series of cases was in connection with the glands of Bartholin. These structures, homalogues of Cowper's glands in the male, although first described by Kasper Bartholin in 1677, have received comparatively little attention since that time. They are oblong tubuloracemose mucous glands situated in the lower portion of the labia majora between the superficial and middle aponeuroses. In addition to the superficial perineal fascia, their outer side is covered by the bulbocavernosus muscle, while the corpus cavernosus partly covers their upper portion. Their function is to lubricate the entrance to the vagina. They become atrophied after the menopause, and infection is consequently infrequent after that time. The ducts of these glands,

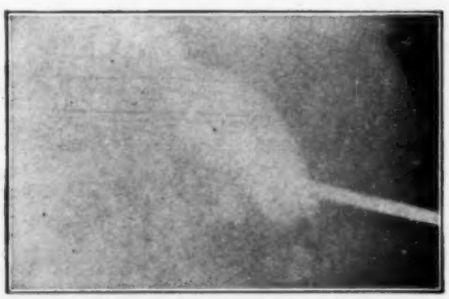

Fig. 4.—Dilatation of duct of Bartholin gland; small tubular portion of gland posteriorly.

which are about three-quarters inch in length and from one-sixteenth to one-eighth inch in diameter, run upward and inward to open on the inner surface of the labia minora in the sulcus between these structures and the hymen or its remains. Their orifice is but partly covered by an imperfect falciform valvular fold of mucous membrane, and they are lined with columnar epithelium. The latter is recognized as a favorite habitat of the gonococcus. Because of their position, the liability of these glands and their ducts to both primary and secondary infection is also increased. The gland, duct or both were infected in 23 per cent. of our cases, as previously stated. In addition to gono-

cocci, other diplococci, streptococci and staphylococci are often found.

Occlusion of the ducts is frequent, and results in the formation of an abscess or a cyst, depending on the presence or absence of infection in the gland. Strictures of the duct are also common. A filiform bougie is of more value than the probe in the diagnosis of both conditions.

Although it is usually impossible to palpate a normal Bartholin gland, an infected gland can be detected in the majority of instances. A palpable gland is usually infected; consequently its removal is advisable, notwithstanding failure to find the gonococcus on examination. Occlusion of the duct may be but temporary, and is not a contraindication to this procedure. An important factor in this connection is our observation that, following operation for removal of one series of fifty-two palpable glands, the ducts of which were occluded or in the secretion from which no gonococci could be demonstrated, these organisms were found in twenty-nine cases in the secretion from the wound. It therefore seems probable that the infection may be dormant in this location for a long period of time, and reinfection of the urethra, Skene's glands or cervix with subsequent extension to the pelvic organs eventually occurs.

ROENTGENOGRAPHY OF THE GLANDS OF BARTHOLIN

Search of the literature having failed to reveal any mention of roentgenography of the glands of Bartholin, we experimented with a number of solutions and mixtures in order to obtain a suitable medium for injection. A 50 per cent. suspension of barium sulphate in liquid petrolatum was found most satisfactory and consequently was used in our work. This mixture is readily injected through a No. 19 Luer needle, the end of which has been blunted. Following the injection of from 1 to 1.5 c.c., roentgenograms are obtained on dental films which have been inserted into the vagina.

Even in the presence of patent ducts, it is impossible to obtain roentgenograms of the small, sclerosed, shotty glands resulting from chronic infection. Treatment by injection of a number of different solutions, including acriflavine and mercurochrome, proved of little or no value, and these were discarded in favor of excision, which is without question the procedure of choice in all acute and chronic pathologic conditions of the glands of Bartholin.

SATISFACTORY OPERATIVE TECHNIC

A 1-inch incision extending an equal distance above and below the posterior commissure is made in the labia majora. The superficial perineal fascia is incised and the sphincter vaginae muscle retracted to one side. The smooth, glistening capsule of the gland is usually recognized, but its detection is expedited by a finger in the vagina pressing the gland into the wound. A pair of Allis clamps is attached to the gland, and it is then freed from the surrounding tissues by blunt dissection, although curved scissors are occasionally required to sever adhesions. The anterior surface of the gland is first freed, next the outer side, then the base, and lastly the duct is ligated and cut close to the wall of the vagina. The proximity of the bulbus vestibuli to the upper end of the wound should be remembered, as puncture of this structure results in profuse bleeding. Button-holing of the vaginal wall should likewise be avoided, as any chance of healing by primary intention is lost if this accident occurs. Bleeding vessels should be tied and dead space obliterated. It is sometimes necessary to take several deep sutures to check the bleeding. Unless the gland has been punctured or pus encountered, no drainage is used; but if this becomes necessary, a counter-incision is made for this purpose one-half inch external to the lower angle of the wound. Healing by primary intention occurred in only eighteen, or 34.6 per cent., of the cases in our first series of fifty-two operations. If this result is achieved, the resulting scar is difficult of detection. Even when the wound breaks down the scar is not marked. If the primary incision is made in the cleft between the labium majus and minus, the resulting scar is not visible; but the chances of primary union are decidedly lessened because of proximity to the rectum and vagina.

CONCLUSIONS

Gonorrhea in women occurs more frequently than is generally appreciated, and should be accorded more attention than it has heretofore received.

The persistence of gonorrheal urethritis is usually due to glandular involvement or strictures at the meatus or within the canal.

Strictures of the urethra, usually at the meatus, are common and should receive appropriate treatment.

The ducts and glands of Bartholin are frequently infected by the gonococcus.

Injections are of little value in the treatment of infected glands.

Urethral glands must be destroyed and Bartholin glands excised.

The entire Bartholin gland must be removed; otherwise, subsequent abscess formation is liable to occur.

Neither absence of demonstrable gonococci nor occlusions or strictures of the ducts are contraindications to the removal of the glands of Bartholin.

ABSTRACT OF DISCUSSION

DR. E. G. BALLENGER, Atlanta, Ga.: This is something that we have paid very little attention to and Dr. Stevens' study of the gland of Bartholin doubtless will help to account for some cases in which we thought a cure of gonorrhea had been effected, but which proved to be infectious. It is quite rational to excise the gland as he has suggested. Nothing is more troublesome than some of these recurrent conditions. We employ the high frequency current to destroy the glands in the cervix. A small bulbous electrode is passed and held in various positions until the endocervical glands are destroyed. The treatment may be repeated in three or four weeks. A purulent discharge quickly changes to a watery discharge. No anesthetic is required.

DR. HERMAN L. KRETSCHMER, Chicago: The only way to treat the infections in Bartholin's glands is by excision. Unless the glands are excised a discharging sinus forms. In reference to Skene's glands, these are overlooked very frequently because we do not think of them, or we cannot find them very easily, but whenever they are infected I always open them up and cauterize them with the actual cautery. We should never neglect to examine carefully for infected Skeene's glands as well as infected Bartholin's glands.

DR. GEORGE H. DAY, Louisville, Ky.: I believe that very few women ever recover completely from a gonorrheal infection. Even the best class of patients look on this as a very ordinary matter, and they will not report regularly for treatment. There is never the same care about following instructions as there is with the men.

DR. ABRAHAM NELKEN, New Orleans: Gonorrheal infection in women is one of the gravest problems with which we have to deal. I agree with Dr. Day that a certain percentage of women who have gonorrhea never recover. I have often wondered just how important is what we may do in the way of local treatment. Some patients get well because they have serious complications accompanied by a severe systemic reaction and thus develop sufficient resistance to overcome the infection. Not a small percentage are cured by radical surgical operations which entail the sacrifice of most of their sexual organs. Dr. Stevens omitted the mention of gonorrhea

of the rectum. I have seen a fairly large number of cases of gonorrhea in women in which infection of the rectum was a complication. Gonorrhea of the rectum occurs much more frequently in women than it does in men, not as a result of depravity or uncleanliness, but solely because of the anatomic relations of the parts infected. Surprisingly little is to be found on this subject in textbooks. In my experience, most of these patients do well under routine irrigations and applications. I have under treatment one case in which, after nine months, gonococci are present in the rectal discharges, though they have long since disappeared from the genito-urinary tract.

DR. A. J. CROWELL, Charlotte, N. C.: Gonorrhea in women is becoming a very serious proposition. We are dependent on the negroes for our servants, and reproduction in the negro race is very rapidly disappearing. We have noticed that as the negroes come from the country to the city they at once stop bearing children. This is due to venereal disease. I believe that 100 per cent. of the negroes in the city are infected with venereal diseases. One great reason for this is neglect on the part of the physician. A negro woman has gonorrhea and the physician tells her to use the douche and sends her away. A white woman with gonorrhea is referred to a gynecologist, and he gives as little attention as he can, probably ordering a douche, and sends her away. It is time for urologists to look after cases of gonorrhea in women themselves instead of turning them over to the gynecologists. In our clinic one man looks after these patients. We have to educate the general practitioner as well as the gynecologist that the work of the urologist and genito-urinary specialist is to look after gonorrheal infection in both men and women. We have been neglecting our duty in this respect in the past.

DR. WILLIAM E. STEVENS, San Francisco: We have tried the high frequency current as recommended by Dr. Ballenger in a few cases only. Therefore, I hardly feel competent to speak on this method, although we thought it was inferior to the actual cautery. Dr. Nelken spoke about gonorrhea of the rectum. As our paper was on gonorrhea of the lower genito-urinary tract, we did not touch on gonorrhea of the rectum. As Dr. Nelken and Dr. Day both say, many of these patients are not cured, and consequently they indefinitely disseminate this disease. This is partly due to the fact that gonorrhea of the lower genito-urinary tract in women is on the borderline between the specialties of gynecology and urology, and neither gynecologist nor urologist has taken sufficient interest in them. I agree with Dr. Crowell that the genito-urinary surgeon should give more consideration to this condition. In my opinion, pathologic conditions of the lower genito-urinary tract, kidneys, ureters and bladder in the female belong to the domain of urology and should be treated by the urologist rather than the gynecologist.

Blood Testing for Transfusion.—The great value of blood transfusion in cases of profound shock is diminished in the minds of many surgeons by the risk of the serious reactions which, according to Lee, are liable to occur when the ronor's cells are agglutinated by the recipient's plasma. The danger of incompatible transfusion is greatly increased by the presence of infection, and, during the war, accidents following transfusion were much less numerous at the front than at the base hospitals. A rapid method of testing the compatibility of the blood of donor and recipient is described by Lee and quoted in Crile's book on anoci-association. One cubic centimeter of blood is collected from the patient and allowed to clot. One drop of the serum thus obtained is placed on a slide. A few drops of the donor's blood are then received directly into about ten times their volume of 1.5 per cent. citrate solution, and a drop of this suspension is mixed with the recipient's serum on the slide. If the bloods are incompatible agglutination appears in a few moments, but if the test is negative it is well to raise the cover-glass after making sure that the two drops are well mixed, and to examine the preparation again. The drop taken from the suspension of the donor's blood should be examined carefully before mixing it with the recipient's serum to exclude the presence of rouleaux, which after mixing, might be mistaken for agglutinated corpuscles.—*Med. Press*, Nov. 3, 1920.

ULCER OF THE BLADDER (HUNNER TYPE) *

H. A. FOWLER, M.D.
WASHINGTON, D. C.

Frequency, urgency and tenesmus, with or without associated pain, localized or referred, are the cardinal symptoms of inflammation of the bladder, or cystitis. Modern urologic methods of diagnosis have taught us, however, that these symptoms are very often associated with or produced by other lesions within the urinary tract: lesions of the renal pelves, the ureters, the urethra and the trigon, as well as the prostate and seminal vesicles. Moreover, irritability of the bladder is associated with a variety of lesions outside the urinary tract, both inflammatory and non-inflammatory in character, involving neighboring viscera.

Hypersensitiveness of the vesical mucosa or irritability of the bladder may, therefore, be due to a variety of causes, all well known and often easily demonstrated by accurate and relatively simple means. Despite this fact, which has been so frequently emphasized that it has become trite, we still see altogether too frequently these patients treated for cystitis for weeks or months in a routine way by irrigations, instillations and internal antiseptics and sedatives without any serious attempt having been made to determine the exact nature of the trouble producing the disturbance. That cystitis is a relatively rare disease, except as secondary to some other lesion of the urinary tract, is a fact still not generally appreciated, at least in a practical way, except by urologists.

After excluding all the recognized causes of bladder irritability, there has remained a certain number of cases, chiefly in women, presenting all the symptoms of acute cystitis in which the ordinary routine examination has failed to show any evidence of inflammation of the bladder. In the absence of any demonstrable lesion to which these symptoms could be attributed, we have, until recently, put these patients into a group with the diagnosis of "neurosis of the bladder," "neuralgia of the bladder," or "neurasthenia with bladder symptoms." These terms signify little or nothing as to the real nature of the condition producing these symptoms, and they serve no purpose whatever in suggesting appropriate means of affording relief. Indeed, until recently, so little has been accomplished in the successful treatment of these cases that the unfortunate sufferers have wandered from one physician and clinic to another in the vain search for relief from their distressing complaints.

It is only during the last few years, largely as a result of Hunner's work, that our attention has been called to certain lesions of the ureter, bladder and urethra occurring in these patients. It has been shown that these lesions, previously overlooked or neglected, are responsible for the symptoms presented, and that a cure of the lesion has been followed by a disappearance of symptoms and a complete restoration to health of these patients. The result has been that at the present time cases are relatively rare in which no underlying cause for the bladder disturbance can be found. The group of bladder neuroses has been gradually broken up as the causative factor has

* Read before the Section on Urology at the Seventy-First Annual Session of the American Medical Association, New Orleans, April, 1920.

been demonstrated in one small group after another. Thus, in an increasing number of these cases a definite pathologic basis for the symptoms has been demonstrated and an appropriate successful treatment for the condition has been established.

In one such group we now know that the symptoms are produced by a peculiar type of bladder ulcer. In this paper I wish to relate my experience with this distinct type of ulcer associated with irritable bladder. This form of bladder ulcer does not appear to have attracted the attention among urologists which its importance and probable frequency demands, if we are to judge by the number of articles on the subject so far published. By bringing the subject before this section for discussion it is hoped we may gather from the experience of others more definite information as to how frequently this condition has been observed, and particularly its occurrence in the male sex.

LITERATURE [1]

In 1914, Guy L. Hunner [2] reported a series of eight cases of "a rare type of bladder ulcer occurring in women." In this most interesting and extremely important contribution it was clearly demonstrated for the first time that, in a considerable group of cases of so-called "neurosis of the bladder," the symptoms depend on a definite, demonstrable, pathologic basis—an ulcer of the bladder. Cystoscopic appearance of this type of ulcer was clearly described, and its etiologic relation to the associated symptoms firmly established. A sound pathologic basis, therefore, was furnished for the rational and successful method of treatment described. In a subsequent paper, published in 1918, ten additional cases are described. While little that is essentially new is added in this later report, the subject is considered in greater detail. Incidentally, the report of ten additional cases observed in so short a time indicates that the condition is not so rare as at first supposed.

In 1919, C. A. L. Reed [3] reported five cases observed by him, in three of which the patients were operated upon. Reed records his obligation to Hunner for calling his attention to this condition. His conclusions, deduced from his experience in these cases, will be referred to later.

It is probable that all of us who have had these unfortunate sufferers referred for examination and treatment have observed the bladder changes so well described by Hunner in his original paper. But these changes, as revealed by cystoscopy, have appeared so relatively insignificant in comparison with the acute bladder distress and suffering that the association appeared only coincident. It seemed quite improbable that such apparently trivial lesions of the bladder mucosa could possibly cause such marked symptoms. It was not until the studies of Hunner revealed the true character of these lesions in which the pathologic condition is much more extensive than that revealed by cystoscopy, that the explanation of the symptoms produced became clear.

1. Since this paper was written, another series of ten cases from the service of John G. Clark has been reported by Floyd E. Keene in Annals of Surgery (**71**: 479 [April] 1920), under the title "Circumscribed Pan-Mural Ulcerative Cystitis." The lesion is beautifully shown by an illustration in colors, and the pathology is fully illustrated. From their experience in this series they conclude that this lesion is a distinct pathologic entity, and the best treatment is excision of the diseased bladder wall.

2. Hunner, G. L.: Tr. South. S. & Gynec. A. **27**: 247, 1914; Boston M. & S. J. **172**: 660, 1915.

3. Reed, C. A. L.: Irritable Bladder in Women, J. A. M. A. **72**: 332 (Feb. 1) 1919.

I have observed three cases of ulcer of the bladder of the Hunner type, all occurring in women. The first one was seen in 1916, before I was familiar with the pathology of the condition. Local treatment of various kinds, applied over a period of many months, gave the patient only temporary relief. Up to the present she has not consented to more radical treatment. The other two patients were operated on and the ulcer-bearing area excised. The results have been brilliant. The prompt and complete relief from the exquisite suffering and constant torture constitutes one of the most gratifying results to be obtained in surgery.

SYMPTOMS

These patients consult the physician complaining of the usual, but exaggerated, symptoms of cystitis: frequency, urgency and tenesmus, with pain. Frequency of urination is always a distressing symptom. This is present day and night. The call is imperative; the act is accompained by smarting and burning, and is followed by strangury and pain. Rest at night is interrupted, and normal social intercourse is prohibited by the necessity for waiting on the bladder. Pain of a sharp, cutting character is frequently complained of. This is referred to the bladder neck, along the urethra, the suprapubic area, or the perineum and rectum. The loss of sleep and almost constant suffering without relief quickly reduce these victims, otherwise healthy, to a pitiable state of chronic invalidism. It is small wonder that they become nervous wrecks.

There is one striking feature in the history of these patients: they have generally suffered for years and have undergone all sorts of treatment without permanent relief. Many of them have been operated on one or more times for various supposed lesions without benefit. Patient 3 in our series had undergone two major operations in an effort to obtain relief from her suffering which had been constant for six years. Nearly all of them have been subjected to prolonged local treatment for cystitis without permanent improvement.

EXAMINATION

While the history suggests inflammation of the bladder, the usual routine examination of the urine fails to detect any evidence of ordinary cystitis. Hunner emphasizes the fact that the urine is macroscopically clear, a centrifuged specimen showing only a few red cells and a few leukocytes. Infection is not present. In our three cases the urinary findings were somewhat different, and must be considered atypical in view of Hunner's larger experience. In Case 1 (in which the patient was not operated on), the bladder urine was slightly turbid, and contained numerous pus and red calls. Cultures showed infection with pneumobacillus. The kidney specimens were sterile and free from pus. Case 2 showed a bacillus infection with considerable pus and a few red cells. In Case 3 the urine was macroscopically clear, but streptococci were reported by the pathologist. As all these patients had been recently under prolonged treatment for cystitis, it is quite possible that infection had occurred while they were under treatment.

CYSTOSCOPY

In performing cystoscopy, the first thing to attract attention is the exquisite sensitiveness of the patient to any form of instrumentation. In spite of a liberal

use of cocain, the passage of the instrument through the hypersensitive urethra is painful. Likewise, the bladder is hypersensitive and intolerant. Distention of the bladder produces marked distress, and is strongly resented. The working capacity is much reduced. Casual inspection of the bladder reveals little or nothing abnormal. On closer examination a small, circumscribed area of inflammation is found on the anterior wall. This small, irregular patch of localized cystitis may easily escape observation if one is not looking for it. Close study of this area shows it intensely congested and reddened, and elevated above the surrounding mucosa, from which it is sharply defined. In Case 2 this area looked as though an inflammatory patch had been laid on the normal bladder wall. The inflammation is more marked at the center, where the color is fiery red. Small tags of whitish material are often seen adhering to the center, and concealing a small ulcer. This was observed in two of our cases. In Case 1 the involved area was linear in outline. In the second case there were two distinct irregular patches of inflammation separated by normal appearing mucosa. I was able to make out a distinct abrasion or loss of substance in one of my cases. In the other two a local cystitis would better describe the cystoscopic appearance than the term ulcer.

PATHOLOGY

Sections from the two specimens obtained by operation show changes similar to those described by Hunner and illustrated in his second paper. The lesion is essentially a chronic inflammation involving all coats of the bladder wall. In Case 2 a considerable area of scarring surrounded the ulcer. With the bladder opened, the extent of this area was easily recognized by the blanched, glazed appearance of the mucosa, which was also slightly puckered. Small nodules could be felt beneath the surface. The appearance suggested that this change was the result of healing processes. The nodules were found on incision to be small cysts filled with a clear fluid. The largest of these was the size of a small grape. The ulcer itself was very small, and the mucosa about it was distinctly puckered. The area of involvement surrounding the ulcer was relatively large, measuring several centimeters in diameter. This extensive involvement of the bladder wall explains the severity of the symptoms produced, and also suggests the futility of local measures employed in the treatment of these ulcers.

DIAGNOSIS

The important point in diagnosis is to suspect the condition. The degree of bladder irritability, with its attendant suffering, is suggestive of some grave vesical lesion. The severity of the symptoms readily suggests tuberculosis. But this idea is quickly dispelled by the examination of the urine, which is macroscopically clear. In two of my cases, however, a uniformly turbid urine called for a differential diagnosis. Aside from the rather unusual cases of extravesical lesions producing such marked irritability of the bladder, the only condition that must be differentiated is chronic granular urethritis and trigonitis. This condition, in our experience, is much more common than is generally supposed. The symptoms in certain cases are strikingly similar to those of ulcer of the bladder. Indeed, it is not possible to differentiate the two conditions exactly by an analysis of the symptoms alone, although remissions are more common with granular urethritis, that is, good days follow bad days, while with ulcer the suffering is more constant.

Examination of the urine is not always conclusive. In general, a catheterized specimen in a patient suffering with granular urethritis is perfectly clear and microscopically free from pus and blood. But I have found repeatedly a considerable amount of pus in the centrifuged specimen from these patients, together with occasional red cells. These findings are confusing if we adhere to any hard and fast rule applicable to all cases. Further, it must be remembered that the two conditions often exist together. In any given case the differential diagnosis can be made only by cystoscopic examination. Extreme caution is necessary not to overlook a small, apparently insignificant, localized area of inflammation. If the bladder mucosa is normal throughout, an examination of the urethral mucosa will disclose the characteristic changes of granular urethritis. And the local application of silver nitrate through the endoscope will confirm the diagnosis by the prompt relief of symptoms.

TREATMENT

A correct understanding of the underlying pathology of this type of ulcer has furnished the basis for a rational method of treatment. It also explains, what clinical experience has abundantly demonstrated, the futility of any form of local treatment in giving permanent relief. Temporary amelioration of symptoms may follow local applications to the diseased area, but a tantalizing recurrence of the symptoms follows sooner or later. And any local treatment, involving, as it does, repeated instrumentation, is extremely painful.

Permanent relief is obtained only by excision of the ulcer-bearing area. Fortunately, the location of the ulcer on the anterior wall or at the vertex in most cases makes excision relatively simple. If the ulcer is located on the free wall of the bladder, the operation may be entirely extraperitoneal. More frequently, however, the involved area extends beyond the peritoneal reflection, and one may have to resort to a transperitoneal approach. It is only in exceptional cases that the peritoneum cannot with care and patience be stripped back sufficiently to uncover the area to be excised. The extent of the area to be removed naturally varies widely in different cases. While great care is necessary to include in the resection the entire area of bladder wall involved, there is little difficulty with the bladder opened in determining just how extensive this involvement is. It corresponds to the area of edema seen in the cystoscopic examination, and this is readily recognized when the ulcer is exposed.

Closure of the bladder is made in the usual way. In my two cases the bladder was closed tight, a small cigaret drain was placed in the space of Retzius, and the bladder was drained by a self-retaining catheter. The bladder was irrigated daily with a 1:10,000 silver nitrate solution.

RESULTS

Our personal experience has been too limited to justify any conclusions. However, the result in both cases has been extremely gratifying and strikingly similar to the results already reported. Certain it is I have never had more grateful patients. Permanent

relief from torturing pain and suffering, and complete restoration to normal health after years of chronic invalidism, is a result that neither patient nor surgeon can soon forget.

1621 Connecticut Avenue.

ABSTRACT OF DISCUSSION

DR. ARTHUR B. CECIL, Los Angeles: In 1870 Lawson Tait reported four cases of what he considered simple ulcer of the bladder, and he likened them to perforating ulcer of the stomach. In 1896 Fenwick reported some cases of simple ulceration of the bladder in which he considered the characteristic features to be ulceration in the trigon, the rest of the bladder being normal, thus differentiating these cases from tuberculosis. Lefur, in 1901, clearly distinguished between ulceration due to tuberculosis, infection and neoplasm, and simple ulceration. Castagni had observed in one of his cases that the artery supplying that portion of the bladder near the ulcer was obliterated, and Lefur attempted to produce simple ulceration of the bladder by the ligation of the vesical arteries. Ulceration did not occur. He did produce ulceration of the bladder, however, by injecting bacteria into the blood stream after previously traumatizing the bladder. In 1913 Burger reported four cases of simple ulcer of the bladder. It is certain that all of these cases would not be considered to be of the Hunner type. One of the patients had had a tuberculous kidney removed, another had a *Staphylococcus albus* infection of the bladder, and the bacteriologic findings in the other two cases are not clear. Burger recommended fulguration as a method of treatment. Hunner's first contribution came out in 1914 when he described eight cases. In 1916 Geraghty described similar conditions in men. Dr. Fowler has gone over the clinical condition well. It would seem that the tendency would be to excise too little rather than too great an amount of the bladder wall, and in doing wide excisions I would like to call attention to the dangers of fantastic closures of the bladder, for if triangular flaps are made, diverticula will almost surely result, and a persistent infection will be kept up. The bladder should be excised in an elliptical manner in order that a direct line closure may be brought about.

DR. LOYD THOMPSON, Hot Springs, Ark.: I was surprised that Dr. Fowler did not mention syphilis of the bladder in this connection. Early this year I reviewed the literature and found fifty cases which I accepted as authentic. This should be mentioned in connection with the type of ulcer Dr. Fowler described in his paper.

DR. JAMES A. GARDNER, Buffalo: In a recent article the author suggested the use of quinin and urea hydrochlorid injections to change the form of inflammation from an injury to scar tissue. I wonder whether this treatment has been tried by any one else and what the results have been.

DR. C. M. HARPSTER, Toledo, Ohio: I have operated on an extensive ulceration of the bladder as large as a dollar just above the trigon. This man had suffered tortures for years but had never received any treatment. I attempted to use the knife, but on account of the extensive bleeding I had to resort to the use of the electric cautery knife to remove the ulcerated portion in that way. The man was practically cured of the suffering he had endured for so long a time.

DR. H. W. E. WALTHER, New Orleans: I have been looking for Hunner ulcers for a number of years, but have been unable to find any. It is difficult for me, when I can see nothing pathologic except an infection of the trigon, to differentiate Hunner ulcer, so-called, from trigonitis. I have been much interested in trigonitis, which was brought to our attention years ago by Garceau, and have had a certain amount of success in treating it with the high frequency method. Most of my patients have been women with granular urethritis, and silver nitrate has cleared up this condition. Dr. Fowler, what is the proportion of males encountered with this condition? Is it more common in females than in males? Dr. Hunner's patients, I think, are all females, and most of us who see mostly males have not seen these conditions. I have had patients referred to me with the diagnosis of Hunner's ulcer, in which it was impossible for me to determine any such condition. Lindeman has been using long flexible needles through the cystoscope to inject quinin and urea hydrochlorid into the bladder mucosa, particularly in connection with trigonitis, with some success. I have had one patient on whom I have used this method; the patient is still under observation and seems to be somewhat relieved. There has been some doubt in my mind as to whether this combination should be injected, on account of the necrosis, but these patients responded very well to 2 per cent. solutions.

DR. HARRY A. FOWLER, Washington, D. C.: The discussion has wandered somewhat from the particular type of lesion considered in the paper. I am glad Dr. Thompson referred to syphilis of the bladder. This is also a rare condition. But it should never be confused with the type of ulcer under consideration; the lesions are entirely different, and the symptoms are not confusing. Dr. Gardner asked about the use of quinin and urea in the treatment of these cases. In a recent paper the injection of quinin and urea has been advocated in the treatment of trigonitis. This form of bladder ulcer has nothing in common with trigonitis. I do not think this method of treatment has ever been tried in cases of Hunner ulcer. I do not believe it would be of any value. The ulcer is always located on the anterior wall, rarely in other parts of the bladder. And while the cystoscope reveals only an apparently superficial lesion, the pathology shows extensive involvement of all coats of the bladder. I do not see how any form of local treatment could be of any use in such extensive involvement. In considering this type of ulcer we have to remember three things: the lesion is found on the anterior wall; the cystoscope shows only a small circumscribed area of inflammation; the symptoms are intense. It is impossible to picture the distress of these patients. The symptoms have persisted, usually for years, and only temporary relief follows local treatment.

TREATMENT OF LEPROSY WITH THE DEAN DERIVATIVES OF CHAULMOOGRA OIL

APPARENT CURE IN SEVENTY-EIGHT CASES

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HONOLULU, H. I.

The Leprosy Investigation Station of the U. S. Public Health Service was authorized by act of Congress in 1905, and established in Honolulu and on Molokai, Hawaii, in 1906. The four principal scientists who successively resided and worked here were Brinckerhoff, Currie, McCoy and Clegg. By a strange fatality, three of those young men are dead—one of pneumonia and two of nephritis. The fourth, Dr. George W. McCoy, is now director of the Hygienic Laboratory in Washington. Those were the pioneers in modern leprosy research in these islands, where the disease has been endemic more than half a century, although now certainly on the decline. Their work was essentially fundamental and was pursued under many difficulties, not the least of which were the prejudices and suspicions of the leper patients themselves. In the course of time, however, those fears of "experimenting" were completely overcome.

Their earlier studies embraced a variety of topics, as shown by their papers, thirty-three in all, published by the government from time to time in a series of bulletins with the general title of "Studies Upon Leprosy." In several of these studies, some creditable

assistance in collaboration was rendered by Drs. Moore, Wayson, Reinecke, Hollmann and Goodhue in the chronological order named. During the period of the war, however, no scientific papers from this station could be published, the government printing office being occupied to capacity with special war work.

KALIHI HOSPITAL

Kalihi Hospital, with 150 beds, occupying a compound of more than 5 acres, owned, equipped and maintained by the Hawaiian Territorial Board of Health, is situated on Kalihi Bay, 3 or 4 miles from the business center of Honolulu. Adjoining it are the laboratories, library, offices, etc., of the Leprosy Investigation Station of the U. S. Public Health Service.

Leprosy patients brought to this hospital from all parts of the territory are entitled to a stay of at least six months for treatment, and longer if they show marked improvement, before being either paroled or transferred to the settlement, 50 miles away on the island of Molokai. For several years past, by an amicable arrangement between the bureau at Washington and the board of health, the director of the investigation station has had charge of the medical treatment of the patients in the hospital. At present we have 117 patients, fifty-three male and sixty-four female. The eldest is 62 years, the youngest 7, the average age being 22 years. We have twenty-four under 15 years of age. In no equal period of time in the whole history of compulsory legal segregation in Hawaii have we had so many voluntary surrenders as in the last year or two. They know they have leprosy, and instead of hiding, as formerly, they come and ask for admission and treatment, even waiving their legal rights for a special examining board.

CHAULMOOGRA OIL

This station has arrived at the conclusion that the nearest approach to a specific for leprosy lies in chaulmoogra oil, known also as oil of gynocardium. This opinion seems now to be shared quite generally by other workers also. The oil has been used in the disease for many years and is obtained chiefly from India, expressed cold from the nuts of a native tree of several closely related varieties, the best being *Taraktogenos kurzii*. It was formerly used here in its crude state, often with some beneficial results. Attempts at this station to modify it by combining with it various drugs, such as camphor, resorcin, iodin and guaiacol, resulted in a measure of success that has since been described,[1] and gave encouragement to the idea that a most valuable curative agent or active principle was there appealing to chemistry for its isolation or, at least, its identification.

In 1918, this station invited and fortunately secured, as college research work, the collaboration of Dr. A. L. Dean, president of the University of Hawaii, himself an expert chemist, who soon became intensely interested in the fascinating problem of extending the researches of Power and his co-workers into the field of therapeutics, and their practical application to the treatment of our patients in Kalihi Hospital. Power[2] had shown that the chaulmoogric fatty acid series, chief of which are chaulmoogric acid and hydnocarpic acid, contain two unique properties: (1) They are optically active, rotating the plane of polarized light to a notable degree, and (2) their atoms are arranged in a closed five carbon ring nucleus entirely different from any other known fatty acids. Here was an interesting and promising clue.

Dean originally separated the oil into four fatty acid fractions and then, on account of their insolubility, converted them into their ethyl esters, thus obtaining thinly fluid oils readily absorbable from intramuscular injection. The laboratory technic by which he effected this he has detailed elsewhere,[3] and it need not be repeated here. A group of patients was placed on each of these, but after several months' trial, all doing equally well, the separation into fractions was abandoned in 1919, after we were convinced that the therapeutic agent was inherent in the entire fatty acid series rather than in any separated fraction, and also that its virtue remained unimpaired by any of the chemical or physical operations to which it had been subjected, such as its treatment with acid, alkali, alcohol, lead acetate, etc., or even the use of more than 200 degrees centigrade of heat. At the same time we also entirely abandoned the Currie and Hollmann crude oil mixture for the new Dean derivatives.

Standard treatment then for weekly intramuscular injection became, and still continues to be, the ethyl esters of the entire fatty acids of the whole oil with 2 per cent. of iodin by weight chemically combined, the dosage of which begins with 1 c.c. and is increased by 1 c.c. at every second or third injection until we reach from 2 to 6 c.c., according to the age and weight of the patient. Internally, patients receive in capsule form the mixed fatty acids carrying 2.5 per cent. iodin in chemical combination; the fatty acids, rather than their ethyl esters, because they better conform to the normal digestive process which precedes fat absorption; we are therefore using by mouth a predigested oil or fat which is semisolid at room temperature, and, in capsule, very easy to take. Its dosage begins with one-sixth gm. per hundred pounds of the patient's weight, three times a day, an hour or two after meals. This is gradually increased every two weeks until the maximum of 1 gm. per hundred pounds of weight per dose is reached. Of these two forms of administration, we have gradually come to regard the injection as the vastly more important of the two. In fact, we had ten patients on injections alone for several months, and they seemed to do as well as those who took both injections and capsules. It should be said for the fatty acids, however, that we consider them the most efficient form of the oil ever devised for internal use. We go for weeks at a time without a single complaint of digestive disturbance. We are sometimes asked why we add the iodin, but confess that we find ourselves unable to furnish an especially substantial defensive reason. It was used by our predecessors here, as also by others elsewhere and was considered decidedly beneficial; it has an old and respectable reputation for effecting catabolic or retrograde metabolism, with a tendency to promote in the economy the absorption of inflammatory and hyperplastic products. Then, too, the fatty acids of chaulmoogra oil are unsaturated acids and therefore capable of taking up iodin to form chemical compounds having none of the irritating properties of free iodin. And yet, we suspect we could

1. McDonald, J. T., and Dean, A. L.: The Treatment of Leprosy, Pub. Health Rep. **35**: 1959 (Aug. 20) 1920.

2. Power and Gornall: The Constituents of Chaulmoogra Seeds, J. Chem. Soc. **85**: 838, 1904; The Constitution of Chaulmoogric Acid, ibid. **85**: 851, 1904. Power and Barrowcliff: The Constituents of the Seeds of Hydnocarpus Wightiana and of Hydnocarpus Anthelmintica; Isolation of a Homologue of Chaulmoogric Acid, ibid. **87**: 884, 1905. Barrowcliff and Power: The Constitution of Chaulmoogric and Hydnocarpic Acids, ibid. **91**: 557, 1907.

3. Hollmann, H. T., and Dean, A. L.: Chaulmoogra Oil in the Treatment of Leprosy, J. Cutan. Dis. **37**: 367, 386 (June) 1919.

we'l do without it. We have at present five patients on the ethyl esters of pure chaulmoogric acid and five on those of pure hydnocarpic acid without any iodin at all, and all ten seem to be doing as well as the others.

A valuable and timely contribution to the chemotherapeutics of chaulmoogra oil is that of Walker and Sweeney [4] of the Hooper Foundation, proving conclusively what was foreshadowed by Dean, that the bactericidal agent, a hundred times more active than phenol (carbolic acid) in the effective destruction of the lepra bacillus is no other than that same unique five carbon ring molecule in the structure of the chaulmoogra acid series. Thus have those skilled investigators absolutely proved by laboratory methods in vitro what I have been empirically demonstrating in vivo at this station for the last two years with the Dean derivatives.

INJECTIONS

Preparatory to injections, we sterilize syringes, needles, etc., for from thirty minutes to one hour by 15 pounds of steam in the autoclave. The site chosen is the upper and outer quadrant of the gluteal region, and a spot for the puncture is painted with tincture of iodin. We employ a 20 c.c. all-glass Paris syringe and ordinary antitoxin needles, one for each patient, inserted its full length to reach the musculature. While there have been reported from other sources rather frequent abscess formation as derogatory to intramuscular injection, I am happy to state that in 6,924 deep injections administered by me from Oct. 1, 1918, to the present time, I have had but one case of resulting abscess.

LEPROSY FEVER AND ERUPTIONS

A problem which confronts every worker in leprosy is that in connection with a group of symptoms known as leprosy fever. It is recognized and described by the authorities in all hospitals in endemic centers, but it is not very common. Since Oct. 1, 1918, in a total of 235 patients under our care, we have had but twenty-one cases, or less than 9 per cent., of greater or less severity. It would seem that it occurs only in those under treatment. Our house superintendent, Mrs. Clinton, who speaks Hawaiian fluently, has made many inquiries of the more observant and intelligent of our patients, and has been unable to find a single instance of its appearance before their entrance to the hospital. Although it has in its peculiar manifestations every symptom of a sudden and malignant exacerbation of leprosy, it gives us no discouragement whatever, as we have learned by experience that the patient not only sooner or later recovers from his acute illness, but shows a remarkably improved condition and a far more active progress toward recovery than before.

The attack is ushered in usually by chilliness, headache, loss of appetite, etc., while the temperature rises a degree or two and sometimes reaches 40 C., with daily remissions which occur rather irregularly. As a rule, the patient is decidedly ill and is entirely willing to remain in bed; there are others again who are on hand in the dining room for every meal and are not very sick. But the most striking feature of the attack is that within from twenty-four hours to two or three days there appear, usually on the face, forearms and hands, but sometimes elsewhere, a number of well-defined, circumscribed eruptions, usually irregularly circular, dull red, and raised from the level of the surrounding skin, thickest in the center, and hot and evidently more or less tender to the touch. They differ in size from that of a dime or less up to that of the palm of the hand or larger. As a rule, the eruptions begin slowly to recede soon after their maximum intensity has been reached, the patient gradually regaining his former status within two or three weeks. We have, however, attacks in all degrees of duration, of severity and of eruption. As to the character of the lesions, in spite of their close resemblance to the original leprosy nodes, I am of the opinion that they are not real nodules. It has been our experience that it is exceptional rather than the rule to find them containing the bacilli of leprosy, which we find in myriads in the slowly growing and slowly receding original nodules. Dyer [5] calls the outbreak papular leprosy, and says:

> In the various exacerbations of leprosy, particularly when the lesions begin to break down, when the toxins are liberated, or the masses of dead bacilli are sent into the circulation, there is frequently a rise of temperature, producing the "fever of leprosy," now regarded as an entity. With this process, a general eruption of lenticular papules appears. This is the only form of papular leprosy so far known, and it is questionable if it may properly be called papular leprosy, as the papule is really only an evanescent exanthem, disappearing with the defervescence of the attack. The papules are free of organisms and are purely exudative in type, inflammatory and hyperesthetic if the sensation is disturbed at all.

The etiology underlying the phenomenon of leprosy fever has been made the subject of considerable attention and study of late, and so far there is considerable unanimity of opinion that it is a sort of toxemia produced by the liberation into the lymph and blood streams of an excess of toxins produced by the bacilli which the body, temporarily at least, is not provided with sufficient antitoxin to meet and successfully combat; in other words, that the balance between toxin and antitoxin is for the time being seriously disturbed.

BEADED BACILLI

A subject of growing interest concerns the changes observed in the lepra bacilli during the course of our treatment. A bacteriologic slide made from a new patient discloses myriads of well-defined bacilli of even, homogeneous stain and of practically even length; in a word, there is scarcely any morphologic difference between the individual bacilli in a microscopic field. In striking contrast to the foregoing is the appearance presented by a specimen obtained from a patient who has for several months been under our intensive treatment with the Dean derivatives. Here we find the greater portion of the bacilli to have undergone a distinctive change which causes them to take the stain only in segments, the bacillus becoming simply a row of bright red dots. When a mass of them are crowded together as in the so-called lepra-cell, there is a characteristic granular appearance in which the rodlike aspects are entirely lost, and so we have become accustomed to record such findings as "b. and g."—beaded and granular.

This phenomenon has been observed in tuberculosis as well, having, it is said, been first described by Koch and named by him moniliform—like a string of beads. Later on, after additional months of treatment, they nearly cease to be acid fast and present in a microscopic field not a single normal bacillus, such findings

4. Walker, E. L., and Sweeney, Marion A.: The Chemotherapeutics of the Chaulmoogric Acid Series and Other Fatty Acids in Leprosy and Tuberculosis, J. Infect. Dis. **26**: 238 (March) 1920.

5. Dyer, Isadore: Leprosy, Reference Handbook of the Medical Sciences, New York, William Wood & Co. **5**: 881, 1915.

being regularly recorded by us as "b. d. o.," meaning bacillary detritus only. Row[6] of the Peel Island Lazaret, Australia, who obtained highly gratifying results with guaiacol, referring to beaded bacilli in an article published in 1909 says:

> How they are destroyed, I am not yet in a position to state definitely, but I am of opinion at present that such destruction is brought about by the removal of their fatty envelop by chemical action. Specimens taken from lepromata that are being absorbed under this treatment reveal the fact that the bacilli contained therein gradually lose their power of retaining the fuchsin stain, when treated with dilute mineral acids, and by examining fresh specimens at regular intervals it can be seen that the number of unevenly stained bacilli increase in proportion to the normally stained ones as absorption progresses, until at last the bacilli disappear altogether.

Sir Leonard Rogers[7] also at the recent Calcutta Leprosy Conference referred to the "active destruction of the innumerable bacilli in the lesions . . . until only a few granules of broken down bacilli remained which ultimately disappeared in favorable cases."

Professor Froilano de Mello of Nova Goa, Portuguese India,[8] has also had about a dozen cases under treatment with marked ameliorations and two cures. The interesting part of his paper, in this connection, is that in a series of five cases he counted the bacilli in a hundred microscopic fields to ascertain the relative numbers of the whole or homogeneous bacilli and those of the beaded and broken ones, half of the tests being made before the patients began treatment at all, the other half at the end of six months of treatment. This meritorious work, which he justly calls hard and wearisome (le dur et ennuyeux travail) he accredits to his assistant, M. Loreto de Sousa; this is undoubtedly the first record of its having been done in leprosy. As to the results of the counting, his figures all show a marked diminution in the number of the "homogenes" and in the disappearance of his "moniliformes," in one case the former being reduced in the six months from 2,236 to 675, the latter from 1,113 to 301.

In all of the earlier cases coming to Kalihi Hospital, it is the rule not to find any instances of the beaded and granular. When we do find them now and then, our interpretation of it is that Nature has begun the effort, feeble though it may be, to establish a defense. It is my opinion that the authors who refer to these forms as "dead bacilli" are correct. Certain it is that along with and in proportion to the amelioration of the clinical symptoms of our patients under our bactericidal treatment, the foregoing changes in the bacilli regularly take place and they finally disappear altogether. It is as yet impossible to say at just what point in this process of beading and granulation the bacteria are no longer viable. But we believe that further investigation will show that at some point after the bacillus loses its rodlike character it is dead, and the further slow processes of disintegration are features of the removal of the nonliving detritus.

NEURAL CASES

It is a well-known but inexplicable fact that the bacillus of leprosy, on gaining admission to the human body, shows a decided predilection for two distinct sites, namely, the skin and the nervous system, the former type by long usage designated "tubercular" or "nodular," the latter, "anesthetic," "nerve" or "neural" leprosy, while a combination of the two types has been termed "mixed." A still further interesting fact is that in the neural type, in the great majority of cases, it is the nerve trunks which send branches to the muscles of the forearm which are most involved. Of these, the ulnar is chiefly affected, the musculospiral and median being less often attacked. The result of this is that the forearm muscles, including the flexors and extensors of the fingers, with their nerve supply impaired, begin gradually to atrophy and slowly to cease to function until the patient partially or completely loses the use of one or both hands by permanent retraction and contraction of the fingers, often accompanied by extensive bone absorption of the phalanges, thus finally acquiring the *main en griffe,* or so-called "leper claw."

Next in order of frequency of attack comes the trifacial, resulting in partial paralysis of the orbicularis palpebrarum or orbicularis oris, or both, as well as several of the other muscles of facial expression. The peroneal and its branches are also frequently invaded, producing in the feet and toes deformities corresponding somewhat to those of the hands and fingers, but perhaps in less degree. Included here also are the plantar pedis, or trophic ulcers of the soles of the feet, so frequently encountered. The sweeping statement that the nasal mucous membrane in a great majority of cases is the site of the initial lesion of leprosy has not been confirmed by other observers. Brinckerhoff, at this station in 1909, conducted a thorough and exhaustive study of the subject and concluded that "the examination of the nasal septum and the nasal secretions is not of dominant value in confirming a diagnosis of leprosy in the early states of the disease."[9]

It will thus be seen that in these purely neural cases it is frequently impracticable to demonstrate the bacilli, as they are deeply seated in the nerve trunks where they have been repeatedly found in abundance at necropsy. On this account, it has often been maintained that it is unnecessary to segregate this type of patients on the assumption that they are not a menace to the public health, the probability of their imparting the disease to others being reduced to the lowest minimum. But this is only an assumption unsubstantiated by proof. We know from the clinical symptoms that these patients have leprosy, but we do not know yet how the bacillus is transferred from the diseased to the healthy individual, nor do we know how soon the purely anesthetic may change to a mixed type. We have recently had a striking illustration of this:

> About a year ago the leprosy officer brought in a boy, aged 13, with both hands nearly ruined, all fingers being shortened to less than half the normal length and greatly deformed. Not another stigma was to be found on the entire body, and the bacillus could not be demonstrated. The majority of the examining board decided against detaining him as not being a menace to the public health. A few weeks ago, after an interval of more than eleven months, the parents returned him to us begging that he be taken in, waiving their legal rights to another examining board. The change in the boy was startling. The case in the interim had taken on the nodular type, involving nearly the entire face with myriads of bacilli easily demostrable, and general skin lesions scattered over the whole body.

A HOSPITAL TREATMENT

Leprosy is such a slow, chronic disease, so insidious and sluggish in its attack and, heretofore at least, so

6. Row, L. E.: Notes on Leprosy, Brisbane, Outridge Printing Company, Ltd., 1909, p. 18.
7. Rogers, Leonard: The Treatment of Leprosy, Indian M. Gaz. 55: 125 (April) 1920.
8. Froilano de Mello: Notre méthode du traitement de la lèpre, read before the Medico-Pharmaceutical Association of Portuguese India, July 15, 1919.
9. Brinckerhoff, W. R.: Studies upon Leprosy.

stubbornly rebellious to therapy, that it taxes all the powers of patience and courage both of its victim and his medical attendant. Advantage has to be taken of every helpful measure for the maintenance of a steady, persistent and unflagging course of treatment which knows no faltering and no discouragement. As Dyer has aptly said, "Above all things individualize the patient; watch for improvement. If it does not show in three months, wait six months; wait a year, or longer. Keep on driving at the treatment until the patient dies or gets well." [5] And the only place for carrying out this eminently wise and sound advice is a leprosy hospital, and best of all one like ours, maintained by the state, backed by a wholesome segregation law which precludes quitting and going home on the whim of the patient, as now obtains in asylums in the Orient.

We receive letters from all over the world from individual patients asking for some of our remedies to "try," but our reply is that they are still in the experimental stage and not yet commercially available; that they constitute essentially a hospital treatment exclusively, where the patient is under constant observation and control; that they do not properly lend themselves to the practice even of the family physician; and that for self-administration, they are absolutely impossible.

There is a wonderful power in association. A group of fellow leprosy hospital patients forget all about the prejudice and horror with which the outside world regarded them. Here, one is as good as another and no one is sensitive about his or her appearance, and they lead a far more happy and contented life than they possibly could outside. They watch each other, compare notes, see the old-timers getting paroled out; they see some improving more rapidly even if their own case is rather slow, so they go patiently on, whereas an isolated patient would get discouraged, give the treatment a black eye, and abandon it. An attack of leprosy fever, which often confines them to bed for several days, our patients endure with the greatest fortitude, because they have learned from observing fellow patients that when they get over that flare-up they will be better than before. A private patient would say that his physician was poisoning him and would quit. Then, too, the material itself can be made only by experts in a well-equipped laboratory. Both Dr. Dean and Prof. Richard Wrenshall, head of the chemistry teaching staff, both of them Ph.D.'s of Yale in physiologic chemistry, have given months of intense study and enthusiastic experiment to it and have even procured special and costly apparatus for its manufacture. And yet I have had parties write to me for the prescription to have it made at the corner drug store.

It should therefore be distinctly understood and appreciated that our system of treatment here is one that cannot in its present stage of development be doled out indiscriminately at any price to isolated and private patients.

RESULTS

Since Oct. 1, 1918, there have passed the scrutiny of examining boards appointed by the Territorial Board of Health and been paroled as no longer a menace to the public health seventy-eight patients, not one of whom has thus far shown the first sign of recurrence. The dates of their release and numbers in each group have been: Dec. 24, 1918, four; Feb. 13, 1919, thirteen; August 12, three; November 12, twenty-eight; July 6, 1920, thirty. There were thirty-six males and forty-two females. Their average age on admission was 23½ years; there were forty-nine of the nodular type, twenty-four of the anesthetic or neural, and five of the mixed; fifty-five were bacteriologically positive on admission, and twenty-three negative; their average stay in the hospital under treatment was fifteen months.

COMMENT

It should be stated that there is a widespread notion that the leprosy law of Hawaii, of which Brinckerhoff himself was one of the framers, reads that the Hansen bacillus must be demonstrated to establish a diagnosis; this, however, is an error; the law simply leaves the diagnosis to the judgment and opinion of a medical examining board. In 1903, I said: "The microscope is the supreme agent of the final diagnosis of leprosy. No patient should be committed to a segregated colony without a bacteriologic demonstration of the disease.[10] With a more mature experience, I have been obliged to modify this view. Leprosy was an established clinical entity ages before its causative bacterium was discovered. As I have shown above, in many unmistakable nerve cases its detection is altogether impracticable. Experts in tuberculosis often make absolutely definite diagnoses long before a single bacillus can be found in the sputum. In doubtful cases of both diseases, however, the finding of bacilli is of course of the greatest diagnostic value.

Again, a greatly overworked symptom is the "bacteriologically negative" finding of authors reporting leprosy cures, as though a selected snip were a sample of the patient's skin, just as a sample of a few cubic centimeters in a test tube determines the presence or absence of an albuminuria. A hundred skin tests might be made from old lesions without finding a single bacillus, because not one of the tests happened to be applied to a point at which any of those few remaining bacilli lay. Of infinitely greater value is, for instance, the finding on the site of a preexisting nodule of a group of bacillary detritus which can be studied and which can give positive and definite information of the patient's status, whether there are any whole bacilli remaining or whether they are all broken and disorganized and scarcely able longer to retain the carbolfuchsin stain and, in a word, are destroyed and dead. Here, one has something definite on which to base a decisive opinion; finding nothing leaves one still in doubt and in the dark. A 14-year-old girl under our treatment for many months was one of our recent prospective parolers, the nodules on her face, the part originally chiefly affected, having entirely disappeared, leaving not even a stain. One, especially prominent on entrance, was on the right ala nasi, and from here a test slide was made. To our great surprise there were found here and there, among the débris of former bacilli, entirely healthy appearing ones of even stain and normal contour. Her name had to be taken from the list in spite of a disappointed mother in tears outside the gate. The child will remain some months longer, but will undoubtedly gain her parole in due time. Three others, adults, were stricken from our list for similar reasons. No one is ever recommended to the board for parole until we are convinced from a careful study of all physical signs and symptoms that the disease is absolutely arrested.

10. McDonald, J. T.: A Diagnostic Examination of One Hundred and Fifty Cases of Leprosy, J. A. M. A. **40**: 1569 (June 6) 1903.

A POSITIVE WASSERMANN TEST IN NONSYPHILITIC PATIENTS AFTER INTRAVENOUS THERAPY

PRELIMINARY REPORT ON A STUDY OF ITS SIGNIFICANCE *

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PHILADELPHIA

Of the many epoch-making discoveries in medicine, few outrank the Wassermann reaction in their significance and in their usefulness. Not only is this reaction considered of essential importance in the diagnosis of syphilis, but it is regarded of great value, as an index of the effects of treatment and as a standard of cure. Not only is it of great service in the detection of the cause of obscure constitutional maladies, but it is relied on as a means of tabulating to what extent syphilis exists in any community.

The Wassermann reaction was first presented by Wassermann and his associates in 1906. It was first believed that this reaction was a specific one; but in 1907 several investigators demonstrated that the complement fixation in syphilis could occur with the extracts of normal tissues and even with certain chemical reagents. From that time to this, various investigators have made efforts toward the perfection of the Wassermann reaction. The introduction of the cholesterinized antigen by Browning and Cruickshank, soon confirmed by Walker and Swift in this country, the introduction of the acetone insoluble lipoid antigen by Noguchi, and a whole mass of data have made this reaction one of the most useful in medicine.

Although the Wassermann reaction was first described fourteen years ago, its interpretation still gives great difficulty. There is as yet no standard technic, no common modus operandi which all workers have adopted, and as a result the interpretation of this reaction is dependent on the individual laboratory worker. There are laboratory workers and clinicians who feel that this reaction is not delicate enough; they are in the vast majority; there are a few, however, who are of the opinion that this test is becoming too sensitive and too delicate.

In this work it was our good fortune to have the vast majority of the Wassermann reactions performed by Dr. John Kolmer, who made the tests without any idea or knowledge of what was being done. A few of these reactions were performed at the Jefferson Hospital laboratories by Dr. E. D. Funk, who also conducted these tests under similar conditions. It was our original intention to have these two workers perform the reactions at the same time and on the same specimens, but that was found impossible and had to be abandoned.

TECHNIC EMPLOYED

Because of the fact that the Wassermann reactions reported in this paper were performed in two different laboratories, we will in brief discuss the technic which each laboratory employed and indicate the interpretation of each investigator.

In the technic employed by Kolmer, the antigens used were cholesterinized alcoholic beef heart, plain alcoholic beef heart and acetone insoluble lipoids of Noguchi. The serums were inactivated and employed in the dose of 0.2 c.c. with each antigen. The antisheep system was used, and the primary incubation was carried out for one hour at 38 C. in a water bath.

In recording the results of the Wassermann reaction, Kolmer followed the scheme proposed by Citron:

++++ = Complete inhibition of hemolysis = strongly positive
+++ = 75 per cent. inhibition of hemolysis = moderately positive
++ = 50 per cent. inhibition of hemolysis = weakly positive
+ = 25 per cent. inhibition of hemolysis = very weakly positive
± = less than 25 per cent. inhibition of hemolysis = doubtful reaction
− = complete hemolysis = negative reaction

With the technic which Kolmer employed, he thus interpreted the results of the Wassermann reaction:

A complete inhibition of hemolysis, 75 per cent. inhibition of hemolysis, and 50 per cent. inhibition of hemolysis invariably mean syphilis. Twenty-five per cent. inhibition of hemolysis occurring with all three antigens probably means syphilis, but when this 25 per cent. inhibition occurs with the cholesterinized antigen alone, it is only suggestive but by no means conclusive of syphilis. Less than 25 per cent. inhibition of hemolysis means a very doubtful positive reaction, and its interpretation must depend on the treatment the patient received, his history and the clinical findings.

There were slight differences in the technic of the Wassermann reaction as employed by E. D. Funk at the Jefferson Hospital laboratories. The antigens were the alcoholic extract of syphilitic liver, acetone insoluble lipoids of Noguchi and the cholesterinized beef heart. Preliminary readings were made after the second period of incubation in the water bath, and final readings after the tubes had been in the ice chest over night. In recording the readings of the Wassermann reaction, E. D. Funk lays the greatest stress on the results obtained with the alcoholic extract of syphilitic liver antigen; and the results of the other antigens were more in the rôle of confirmatory evidence.

In his interpretation of the Wasserman reaction, E. D. Funk in nowise differed from the statements expressed by Kolmer.

THE PROBLEM

The problem which we present in this contribution is a study of the effect of intravenous injection of arsphenamin on the Wassermann reaction of individuals suffering from nonsyphilitic dermatologic affections. The problem suggested itself to one of us (Strickler) because of the comparatively large number of so-called Wassermann-fast patients that one finds in any large syphilitic clinic. In the syphilitic clinic at the Philiadelphia Polyclinic Hospital, and latterly with a similar clinic at the Jefferson Hospital, it was a fairly common observation to see a certain number of the patients clinically well, yet serologically presenting strong and moderately positive reactions, and all this in spite of an energetic arsphenamin treatment. The thought suggested itself whether, after all, some of these positive reactions might not be caused by the drug (arsphenamin) employed in the treatment.

* From the Department of Dermatology and Syphilology, Jefferson Medical College, and from the Dermatological Research Laboratories.

It was primarily to investigate this problem that we selected from the Jefferson Hospital Skin Clinic thirty patients, all males, of varying ages and suffering from varied and various skin affections. All these patients fulfilled these requisites: (1) The first Wassermann reactions were absolutely negative in every instance; (2) they presented a negative syphilitic history, and (3) their skin affections were definitely nonsyphilitic. The ages of these patients varied from 15 to 63 years. Included in this list were patients with eczema, psoriasis, acne vulgaris and rosacea, vitiligo, purpura, sycosis vulgaris and some of the rarer skin affections.

Our method of procedure was to give weekly injections of arsphenamin in doses of 0.5 gm. intravenously. Preceding each treatment, sufficient blood was withdrawn for a Wassermann reaction. Sterilized tubes were employed to receive the blood, and these tubes were immediately put on ice. The needles and syringes employed were washed with sterile water and sterilized by boiling after each treatment, so that there was no possibility of contamination or transfer of blood from one patient's tube to some other tube. The tubes were all numbered and the key to the names kept by one of us, so that neither of those who conducted the Wassermann tests had any knowledge whatsoever of whose blood it was that they were testing. It is felt that this research was conducted in the most ideal manner, owing to the fact that those who conducted these reactions were in absolute ignorance of what treatment was administered and whether these patients had syphilis or some skin affection.

In this problem we employed the brand of arsphenamin manufactured by the Dermatological Research Laboratories and also the salvarsan brand manufactured by the Metz Laboratories. By far the greater number of patients received the arsphenamin of the Dermatological Research Laboratories.

In all, twenty-four patients were treated with the Dermatological Research arsphenamin. Of this number sixteen, or 66 per cent., gave at least one positive reaction; fourteen, or 58 per cent., gave two or more positive reactions. The greatest number of positive reactions in one case was nine; in another case we obtained six positive reactions. If we consider 50 per cent. inhibition of hemolysis as indicative of syphilis, for this is the conception of the serologists, we can state that out of our total number the serums of nine patients, or 38 per cent., gave a + 2 or a greater degree of positive reaction; five, or 21 per cent., gave a +1 positive reaction; two, or 8 per cent., gave a very doubtful positive result; and eight, or 33 per cent., gave consistent negative Wassermann reactions.

It is rather interesting to note that the serums of a few of our patients continued to give positive results after the cessation of intravenous arsphenamin treatment.

The records of some of our patients present data of such great interest that we feel them worthy of comment:

ILLUSTRATIVE CASES

CASE 1.—T. H., a man, aged 52, with eczema of the legs of four months' duration, had a negative Wassermann reaction at the first test, and he received the first injection of arsphenamin, Dec. 20, 1919. He received weekly injections, and on Feb. 7, 1920, after seven injections of arsphenamin, his Wassermann reaction was reported + 1 (J.). The next week, February 14, his Wassermann reaction was negative; February 21, it was again + 1, + 1, + 1 (K.), + 1 (J.); March 2, it was + 3, + 3, + 3 (K.); March 9, + 2, —, — (K.); March 16, + 1, —, — (K.). March 24, one week after cessation of treatment, his Wassermann report was + 3, —, — (K.); April 6, three weeks after cessation of treatment, it was +3, + 3, + 1 (K.); and April 13, one month after cessation of treatment, it was + 1, + 1, + 1 (K.). His reactions continued to be negative for four successive weeks in the absence of intravenous treatment when, May 18, his Wassermann report was + 2, —, + 1. From that time until June 28, his Wassermann reactions have been negative. At no time was his eczema benefited by the intravenous treatment. In all, this patient received twelve injections of arsphenamin.

CASE 2.—S. P., a man, aged 27, who was married and the father of one child, had eczema of the legs and genitalia. He worked around gas engines. There was no venereal history. The first Wassermann reaction was negative. Treatment began, Feb. 14, 1920. The first positive Wassermann reaction was March 2, + 3, + 3, + 3 (K.); March 9, + 2 (J.); March 17, + 1, — — (K.); March 24, + 2, —, — (K.). Then followed four negatives in succession. April 9, one week after the last dose of arsphenamin, it was + 2, —, — (K.); April 13, + 1, + 1, — (K.). He then gave three more negative Wassermann reactions and disappeared from observation. After his fourth injection of arsphenamin this patient would develop urticarial lesions of the face and body immediately after receiving the treatment, and his eczema would become greatly aggravated so that we found it necessary to discontinue his treatments after he had received in all seven injections of arsphenamin.

CASE 10.—W. B., a man, aged 23, with acne rosacea of one year's duration, had a negative Wassermann reaction at the first test. The patient began treatment, Dec. 9, 1919. He received between that date and Jan. 17, 1920, four injections of arsphenamin. January 24, we began giving this patient neo-arsphenamin. The dose varied between 0.5 and 0.9 gm., at weekly intervals. February 7, his Wassermann report was + 2 (J.). He then gave two successive negatives when, March 2, he again gave + 2, + 2, + 2 (K.); March 9, his Wassermann report was + 2 (J.). He then gave ten straight negatives, during all this time receiving no treatment whatsoever and with no benefit to his acne rosacea.

In all, we treated six patients with the Metz salvarsan brand of arsphenamin. Owing to the severity of the reaction and hesitancy on the part of the patients to continue it, the injections with the Metz salvarsan were not carried out consistently. Between April 24 and May 15, 1920, no treatments were administered and no patient in this series received more than a total of nine treatments, and no more than seven consecutive treatments.

Out of this series, one patient gave a 100 per cent. fixation + 4, + 4, + 4 (K.); and another gave three doubtful Wassermann reactions, the first reaction occurring after the first injection.

CASE 1 (in this series).—H. K., a man, aged 21, with erythematosquamous eczema of the face of three years' duration, recurrent, had a negative Wassermann reaction at the first test. April 10, 1920, the patient received the first injection of salvarsan (Metz): one week later, April 17, he received his second injection; treatment was then discontinued until May 15, when his Wassermann reaction showed + 4, + 4, + 4 (K.). From that time until June 29, his Wassermann reactions have continued negative. He received in all nine injections of salvarsan. Clinically, his eczema showed no improvement.

THE PROVOCATIVE WASSERMANN REACTION

It appears timely to discuss the question of the provocative Wassermann reaction. This was first announced by Gennerich in 1910 as a procedure valuable in the diagnosis of obscure syphilitic infection and as a method of determining whether a patient is really cured of his infection. There are two views in reference to the provocative Wassermann. One group, led

by Pollitzer, King and others, feels that this reaction is likely to give misleading results and condemn it. Other observers, as Stokes and Nichols, are of the opinion that this reaction has a distinct and useful field of application.

As all our patients gave negative syphilitic histories, and since physical examination failed to disclose any scars or stigmas of syphilis; since these patients suffered from skin affections in the eitology of which syphilis plays no rôle; since the treatment did not favorably influence these lesions; in fact, the distinct tendency being toward an aggravation of their dermatologic affection; since their first Wassermann reactions were absolutely negative, and, what is most conclusive, the fact that the vast majority of the Wassermann reactions turned from a clear-cut negative to positive at an interval far beyond the time set for the appearance of the provocative Wassermann; and, what is also to be considered, that our patients were receiving weekly injections of arsphenamin—all these facts seem to us to prove conclusively that the Wassermann reactions we obtained cannot and should not be classified in the category of provocative reactions.

If we may theorize on the possible cause of the positive Wassermann reactions produced in our experiments, one is inclined to incriminate the arsphenamin as the causative agent. It was our impression in this research that of those patients who consistently were made ill after the treatments, their serums were most likely to show positive results. Of course, this observation was by no means the universal rule. In this connection the observations of Strathy and his associates on delayed arsenic poisoning following the use of arsphenamin is worthy of consideration. They report fifty-eight cases of delayed arsenic poisoning, eight of which were fatal. The symptoms in each case were similar. In all of the fatal cases and in thirty-nine of the nonfatal ones jaundice was a prominent symptom. The urinary findings were: albuminuria in twenty-eight cases; bile salts in thirty-five; increased urobilin and urobilinogen in sixteen.

In view of these findings, it is suggested that the arsenic in the arsphenamin in some way acts on the liver alone or on the spleen and bone marrow also; that one or all of these organs may as the result of the arsphenamin administered elaborate a lipoidal sub-

TABLE 1.—RESULTS WITH PATIENTS RECEIVING ARSPHENAMIN OF DERMATOLOGICAL RESEARCH LABORATORIES

Case Number*	Age	Diagnosis	Duration of Disease	Previous Venereal History	Result of First Wassermann Test	Number of Treatments to Produce 1st Positive Wassermann Reaction	Intensity of 1st Positive Wassermann Reaction†	Total Number of Treatments	Total Number of Positive Reactions and Their Degree of Intensity†
1. T. H.	52	Eczema	4 months	Negative	Negative	7	+1 (J.)	12	1. +1 (J.) 2. +1, +1, +1 (K.) 3. +3, +3, +3 (K.) 4. +2, —, — (K.) 5. +1, —, — (K.) 6. +3, —, — (K.) 7. +3, +3, +1 (K.) 8. +1, +1, +1 (K.) 9. +2, —, +1 (K.)
2. S. P.	27	Eczema	2 years	Negative	Negative	2	+3, +3, +3 (K.)	7	1. +3, +3, +3 (K.) 2. +2 (J.) 3. +1, —, — (K.) 4. +2, —, — (K.) 5. +2, —, — (K.) 6. +1, +1, — (K.)
3. R. B.	33	Eczema	.....	Gonorrhea, 1902	Negative	4	+1, —, — (K.)	9	1. +1, —, — (K.) 2. +2, +2, +2 (K.) 3. ±, —, — (K.)
4. H. H.	17	Acne vulgaris	3 years	Negative	Negative	1	+3, +3, +3 (K.)	11	1. +3, +3, +3 (K.) 2. +2 (J.) 3. +2, —, — (K.) 4. +3, —, — (K.) 5. +3, +3, +3 (K.)
5. W. R. T.	22	Acne vulgaris	6 months	Negative	Negative	2	+1, +1, +1 (K.)	12	1. +1, +1, +1 (K.) 2. +3, +3, +3 (K.)
6. J. V.	28	Purpura simplex	6 months	Negative	Negative	4	+2, +1, +1 (K.)	13	1. +2, +1, +1 (K.) 2. +1, +1, +1 (K.)
7. F. F.	21	Acne vulgaris	2 years	Negative	Negative	2	+2, +1, +1 (K.)	13	1. +2, +1, +1 (K.) 2. +1, +1, — (K.)
8. F. U.	19	Tinea cruris	3 days	Negative	Negative	1	+1, —, — (K.)	5	1. +1, — (K.) 2. +1, —, — (K.) 3. +2, +1, +1 (K.)
9. M. A.	30	Furunculosis	8 months	Negative	Negative	1	+2 (J.)	4	1. +2 (J.) 2. +1, —, — (K.)
10. W. B.	23	Acne rosacea	1 year	Negative	Negative	6	+2 (J.)	12	1. +2 (J.) 2. +2, +2, +2 (K.) 3. +2 (J.)
11. P. C. B.	24	Scabies and dermatitis	5 months	Gonorrhea, 1912	Negative	2	+1, +1, +1 (K.)	4	1. +1, +1, +1 (K.) 2. +2 (J.)
12. T. L.	33	Epithelioma	1 year	Negative	Negative	3	+2 (J.)	12	1. +2 (J.)
13. M. S.	33	Eczema	2 months	Negative	Negative	3	+1 (J.)	10	1. +1 (J.) 2. +1, —, — (K.)
14. T. S.	21	Acne vulgaris	2 years	Negative	Negative	1	+1, —, — (K.)	10	1. +1, —, — (K.) 2. +1, —, — (K.) 3. ±, —, — (K.)
15. H. McC.	41	Sycosis vulgaris	9 months	Negative	Negative	3	+1, +1, +1 (K.)	9	1. +1, +1, +1 (K.) 2. ±, ±, — (K.)
16. C. C.	51	Erythema perstans	18 years	Negative	Negative	3	+1, +1, ± (K.)	9	1. +1, +1, ± (K.)
17. T. S.	35	Eczema	6 years	Negative	Negative	Negative	.....	10	—
18. F. J. S.	15	Psoriasis	Unknown	Negative	Negative	None	.....	9	—
19. J. R.	17	Acne vulgaris	3 years	Negative	Negative	None	.....	10	—
20. M. S.	16	Acne vulgaris	18 months	Negative	Negative	None	.....	6	—
21. A. F.	30	Seborrheic dermatitis	3 months	Negative	Negative	None	.....	8	—
22. M. W.	63	Sycosis vulgaris	2 years	Negative	Negative	None	.....	10	—
23. W. J. T.	25	Rosacea et dermatitis	2 years	Negative	Negative	None	.....	8	—
24. C. M.	38	Vitiligo	7 years	Negative	Negative	None	.....	7	—

* All were male patients, and in all the clinical condition was unimproved.
† The tests made by Dr. Kolmer are indicated by K., and those by Dr. Funk at Jefferson College by J.

stance which, when it occurs in sufficient quantity in the blood stream, is capable of yielding a positive complement fixation test for syphilis. What the nature of this substance is and whether or not it is analogous to the lipoidal substance elaborated by *Spirochaeta pallida* we are in no position to answer. At present we are conducting chemical research in the department of chemistry, Jefferson Medical College, by means of which we hope to throw some light on the nature of the chemical change produced in the blood following the intravenous administration of arsphenamin, which is capable of yielding a positive Wassermann reaction.

COMMENT

As a result of these findings, the following suggestions relative to the diagnosis, prognosis and treatment of syphilis are advanced:

Diagnosis.—A positive complement fixation test for syphilis obtained with the serum of a patient treated with arsphenamin for some nonsyphilitic malady or some obscure disease should be interpreted with great caution and considerable reservation. In view of the fact that there are a number of affections, such as anemia, malaria, recurrent fever, pemphigus, psoriasis and septicemia, in which arsphenamin is recommended as a method of treatment, and because arsphenamin is employed at times in the treatment of obscure diseases and affections difficult to influence as a sort of last resort, it becomes the duty of the clinician and the serologist not to be over hasty or too dogmatic in pronouncing such an individual as definitely syphilitic. Only recently two such instances came under personal observation. One was a patient who presented a typical acne rosacea, and the other a patient who suffered from a Marjolin's ulcer of the left ankle. The latter patient received nine injections of arsphenamin and the former three injections before coming under our observation.

Treatment.—Because of our findings, it is our belief that at times too much arsphenamin is administered in the treatment of syphilis, and that this remedy may at times be responsible for the persistence of a positive Wassermann reaction.

The hope that has been aroused of a "therapia sterilisans magna," a rapid and radical cure of syphilis, has not been realized. The effect of arsphenamin on the initial lesions of syphilis, the mucous patches and the early and late eruptions of this malady are definite. Certainly arsphenamin silences syphilis, so that the danger of contagion is immeasurably diminished, and it is needless to dwell on the social importance of this result.

Notwithstanding the influence of arsphenamin, the logical treatment of syphilis consists in the judicious combination of arsphenamin and mercury. From the wild enthusiasm following the introduction of arsphenamin, the pendulum of experience is now reaching level, namely, the reduction of the total amount of arsphenamin administered and the thorough and early use of hydrargyrum, so that today the leading syphilographers are advocating three or four intravenous injections of arsphenamin given at short intervals (one or two days apart) instead of from eight to ten injections of this remedy at weekly intervals.

The general opinion is that today we are curing more syphilitic patients than we did when mercury alone was employed. No one can deny the great value of arsphenamin; but sight must not be lost of the fact that now we do not wait for the development of the secondary eruptions before beginning treatment. With our improved methods of diagnosis, we often begin our treatment for syphilis either during the stage of the initial lesion or during that of the secondary incubation.

The tendency of the leading syphilographers is to give arsphenamin at short intervals and fewer doses, and to push mercury with the same enthusiasm as we do arsphenamin. With this view we can concur as a result of our studies. It is our impression that with this mode of attacking syphilis we shall probably have fewer so-called Wassermann fast, in reality arsphenamin (arsenic) fast patients.

TABLE 2.—RESULTS WITH PATIENTS RECEIVING SALVARSAN OF METZ LABORATORIES

Case Number*	Age	Diagnosis	Duration of Disease	Previous Venereal History	Result of First Wassermann Test	Number of Treatments to Produce 1st Positive Wassermann Reaction	Intensity of 1st Positive Wassermann Reaction†	Total Number of Treatments	Total Number of Positive Reactions and Their Degree of Intensity†
1. H. K.	21	Eczema	3 years	Negative	Negative	2	+4, +4, +4	9	1. +4, +4, +4
2. F. J.	20	Furunculosis	3 months	Negative	Negative	1	±, —, —	7	1. ±, —, — 2. doubtful neg. 3. ±, —, —
3. D. B.	17	Acne vulgaris	10 months	Negative	Negative	...	.....	6	—
4. I. E.	22	Ulceration of tongue	2 years	Negative	Negative	...	.....	8	—
5. N. N.	33	Eczema	6 years	Gonorrhea, 10 years	Negative	...	.....	8	—
6. F. P.	24	Eczema	4 years	Negative	Negative	...	.....	8	—

* All were male patients, and in all the clinical condition was unimproved.
† The tests were made by Dr. Kolmer.

Curability and Prognosis.—The tendency among leading authorities on syphilis is toward intensive treatment; the general trend among leading serologists is to make the Wassermann reaction as sensitive as possible, by new innovations in technic and the use of more delicate antigens. These innovations in the treatment of syphilis and these refinements in the delicacy of the Wassermann reaction are tending toward a different conception of the Wassermann reaction as an index of the curability of syphilis.

What is agitating the leading syphilographers today is the question as to whether a syphilitic patient, clinically well, must continue to submit to treatment until he is serologically negative. At this juncture the studies of Udo Wile on the curability of syphilis, based on the Wassermann reaction as an index, are worthy of discussion. In his series of patients he proved conclusively that, given patients in the same syphilitic state, treated under similar conditions and with the same plan of procedure, the percentage of cures obtained varied with the technic of the Wassermann reaction which was employed.

We are convinced, with Udo Wile, that "in the presence of intensive therapy, a positive test does not necessarily mean living spirochetes and potential syphilis, any more than a positive tuberculin test in an individual who has had tuberculosis would indicate the presence of living tubercule bacilli."

In the light of our ignorance of the nature of this reaction, and particularly in the light which this study throws on the interpretation of at least some of our persistent Wassermann-positive reactions, we submit that serologic and clinical cures are not necessarily parallel. Energetic treatment that is directed toward the end of attempting to make a persistent positive reaction negative may be not only useless but also misdirected.

In this investigation, no subject received more than seven injections of arsphenamin in weekly succession. Those receiving more than seven injections were permitted to let two weeks intervene between treatments.

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Syphilis in Bronchitis with Emphysema.—In a recent critical study of chronic bronchitis, Dr. Dalsace draws attention to the frequency with which syphilitic infection rather than the commonplace tuberculosis may be held accountable for an apical pulmonary fibrosis. He argues that such a patch of fibrosis is very commonly to be found in patients with bronchitis and emphysema, and is inclined to connect the development of the two latter with the presence of the former. While admitting that the majority of these patients owe their apical fibrosis to infection with the tubercle bacillus, he argues that if the sputum is, as often happens, invariably free from tubercle bacilli, the diagnosis of "apical syphilis" should be made rather than that the sclerotic changes should be put down to a previous apical pneumonia or a healed tuberculosis lesion.—*Brit. M. J.*, Oct. 30, 1920.

NUTRITIONAL WORK IN PUBLIC SCHOOLS

A FURTHER REPORT OF WORK DONE UNDER THE SUPERVISION OF THE BOARD OF EDUCATION IN THE PUBLIC SCHOOLS OF CHICAGO

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CHICAGO

In July, a brief report [1] was made of the experiment in nutritional work in five of the Chicago public schools, made during the winter of 1919-1920. This work was done under the supervision of the Chicago Board of Education, to determine a practical method of teaching undernourished children of preindustrial age.

The accompanying tabulations of the work done and the results obtained are of value chiefly in indicating the possibilities of still more efficient work, and its practicability in public schools.

The development of the work was slow. This was largely due to the fact that it seemed more desirable to do careful, reliable work with a comparatively small number of children, than to reach larger numbers and have less dependable figures on which to base later studies.

The weighing and measuring was done at definite periods, and by the same nutritional worker for each

TABLE 1.—SUMMARY OF GAINS AND LOSSES IN FIVE CHICAGO PUBLIC SCHOOLS

	Number of Children in Class	Height Increase	Normal Height Increase	Per Cent. in Excess of Normal	Per Cent. Less Than Normal Increase	Net Gain in Weight	Normal Gain	Per Cent. in Excess of Normal	Per Cent. Less Than Normal Gain	Graduated: Number	Graduated: Per Cent.
Franklin School:											
1. Fresh air dept. class* (rest, supplementary food; period, 7 months)	26	37.7	31.0	21	..	176.9	137.3	29	..	13	50
2. Prevocational class (no rest, 12 oz. milk at 10:15 and 3; period, 3 mos.)	23	15.0	10.0	50	..	69.5	44.0	57	..	12	52
3. Prevocational class (no rest, no supplementary food; period, 5 weeks)	18	9.7	4.3	22	..	(0.7)	10.6	..	9	3	16
4. Overweight class (diet, 4 week period; height equal to age average)	19	5.7	3.1	84	..	13.0	Loss equals gain in this class				
5. Retarded in growth from 7 to 17% (height, weight, coefficient normal; period, 4 weeks)	14	3.7	2.6	42	..	(0.7)	7.2				
	Not totaled; different problems involved; groups not comparable										
Dante School:											
Prevocational Class 1* (12 oz. milk 10:15 and 3; period, 20 weeks)	10	6.0	8.8	..	31	60.2	28.9	139	..	5	50
Prevocational Class 2 (12 oz. milk 10:15 and 3; period, 12 weeks)	20	16.2	9.5	70	..	103.5	51.5	100			
Total	30	22.2	18.3	..	..	172.7	80.4	....	..	9	..
Average	..	....	....	21	..	.....	....	114	..	..	30
Haines School:											
Prevocational Class 1 (12 oz. milk 10:15 and 3; rest period)	18	11.1	7.7	44	..	33.7	37.0	..	9	4	22
Prevocational Class 2 (12 oz. milk 10:15 and 3; rest period)	21	8.9	10.8	..	17	28.0	39.7	..	29	6	28
Total	39	20.0	18.5	..	..	61.7	76.7	..	..	10	..
Average	..	....	....	8	..	.....	....	2	..	..	25
Wells School:											
Prevocational Class 1 (no rest; no supplementary food; period, 8 weeks)	18	8.2	5.2	57	..	34.8	21.5	62	†	†	†
Prevocational Class 2 (no rest; no supplementary food; period, 9 weeks)	17	6.7	4.2	59	..	28.5	26.2	9	†	†	†
Total	35	14.9	9.4	..	..	63.3	47.7	..			
Average	..	....	....	58	..	.....	....	32			
Montefiore School:											
Prevocational Class 1 (no rest; no supplementary food; period, 16 weeks)	19	No comparative height record possible owing to change of scales				88.0	53.1	65	..	4	21
Prevocational Class 2 (no rest; no supplementary food; period, 3 mos.)	10	....	....	..	..	14.0	14.8	..	6	0	
Total	29	....	....	....	....	102.0	67.9	54	..	4	14

* Started in cooperation with Elizabeth McCormick Memorial Fund.
† Marked increase in height, the result of classwork; held to establish normal weight for additional height.

1. Rich, Katharine B.: Study of Nutrition and Mental Development in Childhood, J. A. M. A. **75**: 226 (July 24) 1920.

group. A variation in methods used by different individuals is always possible, and can easily result in vitiating the final statistics.

The personal element in the success of the work is very large. The nutritional worker who has an applicable knowledge of psychology will inevitably obtain the best results, other things being equal. The class of children, or their nationality, has seemed to make little difference. The school in the Italian quarter, however, had fewer children requiring our teaching, apparently because of the better balanced diet that was given them at home.

As will be seen from the tabulation, the class in the Open Air School, where rest periods, milk and a noon dinner were provided, gained less than those in the closed rooms. This raises the question as to whether or not the children who assume the responsibility for their own improvement will not do better than those for whom the effort is made by others. This assumption is strengthened by the fact that the classes in which the cooperation of the mothers was obtained only through the individual child showed results which were eminently satisfactory.

The development of the work indicates that the undernourished children may well be divided into three groups: (1) infants and young children up to the age of 6 years; (2) children from 6 to 13 years, and (3) boys and girls from 13 through the period of high school education.

The handling of the first two groups is an expensive undertaking, requiring the absolute cooperation of the parents, and consequently, many visits of a capable worker. Organizations outside the school system seem best able to cope with these groups.

The third group, on the contrary, is controlled almost exclusively through the proper presentation of the problem to the individual student, and through his own interested effort to become both physically and mentally fit. It is largely a question of psychology, and presents a great opportunity for character building.

The nutritional worker has little effort to expend in reaching the parents, as the children prefer to consider

TABLE 2.—PHYSICAL DEFECTS

	Defective Vision	Adenoids	Deflected Septum	Tonsils	Granular Pharyngitis	Carious Teeth	Hutchinson's Teeth	Defective Speech	Chronic Otitis Media	Enlarged Glands	Winged Scapula	Lateral Curvature	Tachycardia	Heart Valvular	Fatigue Posture	Flatfoot	Goiter	Roughened Breath Sounds	Specific	Grand Total	Number of Children in Class	Average Defectives per Child
Franklin School:																						
Fresh air dept. class	10	9	9	9	16	12	5	3	3	26	23	10	..	12	23	2	8	14	5	199	26	7.6
Prevocational class 1	5	19	2	18	..	13	3	4	1	23	19	10	..	11	19	..	4	5	3	159	23	6.9
Prevocational class 2	2	13	1	13	2	5	..	..	..	15	17	5	..	7	17	..	8	1	1	107	18	5.9
Overweight class	5	12	1	13	..	5	1	..	..	6	4	3	10	..	..	..	11	..	1	72	19	3.7
Retarded height class	3	7	..	7	..	10	..	2	2	2	7	4	..	5	7	..	..	2	2	60	14	4.2
Total	25	60	13	60	18	45	9	9	6	72	70	32	10	35	66	2	31	22	12	597	100	
Dante School:																						
Prevocational class 1	1	8	1	7	..	5	2	..	1	9	9	1	..	4	9	..	5	..	2	64	10	6.4
Prevocational class 2	5	12	1	12	1	6	2	..	..	13	11	2	..	5	11	..	1	7	2	91	20	4.5
Total	6	20	2	19	1	11	4	..	1	22	20	3	..	9	20	..	6	7	4	155	30	
Haines School:																						
Prevocational class 1	4	15	1	15	..	12	1	..	..	18	18	11	..	11	18	..	6	1	1	132	18	7.3
Prevocational class 2	7	15	1	15	2	14	..	..	..	16	17	7	..	3	17	..	4	2	..	120	21	5.7
Total	11	30	2	30	2	26	1	..	..	34	35	18	..	14	35	..	10	3	1	252	39	
Wells School:																						
Prevocational class 1	5	15	..	15	..	14	1	2	..	14	13	6	..	9	13	..	7	4	1	119	18	6.5
Prevocational class 2	6	9	..	9	..	7	..	..	..	13	13	7	..	6	14	..	6	2	..	92	17	5.4
Total	11	24	.	24	..	21	1	2	..	27	26	13	..	15	27	..	13	6	..	211	35	
Montefiore School:																						
Prevocational class 1	1	13	11	11	..	7	1	..	2	16	16	6	..	9	17	2	1	5	1	119	19	6.2
Prevocational class 2	..	5	..	4	..	5	1	..	..	7	10	4	..	4	10	..	3	2	1	56	10	5.6
Total	1	18	11	15	..	12	2	..	2	23	26	10	..	13	27	2	4	7	2	175	29	
Grand total	54	152	28	148	21	115	17	11	9	178	177	76	10	88	175	4	64	45	*20	1,390	233	

TABLE 3.—SCHOOL EXAMINATIONS

	Physicals*	Snellen	Pediculosis	Hemoglobin	Urinalysis	Mental Tests	Wassermann Test	Excluded Symptoms‡	Miscellaneous	Grand Total	Weighing Weekly§	Weighed, 5, 6, 7, 8 Grades	Number Weighed
Franklin School	371	268	225	225	235	9	1	50	144	1,528	F.A.D.	Once	194
											N.C.	Twice	380
Dante School	43	43	43	35	...	..	..	..	...	164	N.C.	Once	322
Haines School	37	37	37	38	...	..	..	..	...	149	N.C.	Once	322
Wells School	35	49	2	31	...	..	..	..	...	117	N.C.	Once	173
Montefiore School	27	29	29	21	...	..	..	..	...	106	N.C.	Once	197
Total	513	426	336	350	235	9	1	50	144	2,064			1,588

* Physicals: Entry does not include those made for work certificates. Nutrition work record only.
§ F. A. Dept., Franklin School: Transfers to closed window rooms; total enrolment weighed weekly. Eyes of kindergarten pupils not examined.
‡ Infectious and contagious diseases.

it their own business—their first real "job" in life—and get the cooperation at home when they feel the need of it. The problem in classes of this type, requiring fewer nutritional workers, as it does, is a much less expensive one, for each worker can take care of a larger number of groups.

While some of the classes for whom milk was provided made good gains, those who had no milk also gained will. As a school interest is further developed, it seems quite probable that fully as good results will be obtained without the necessity of providing milk during the school sessions.

No rest periods were provided for any of the classes during school hours. Rest periods, however, were

TABLE 4.—CLINIC AND DISPENSARY CASES

	Eye	Ear	Teeth	Skin	Wounds	Wounds Infected	Antitetanus Serum	Grand Total
Franklin School.....	108	28	155	6	47	28	1	373
Dante School.....	4	..	12	..	..	..	..	16
Haines School.....	3	..	7	..	..	..	..	10
Wells School.....	7	..	17	..	..	..	..	24
Total.....	122	28	191	6	47	28	1	423

taken at home, and early hours for retiring were observed, this being part of the responsibility that the class members assumed.

Many physical defects were corrected, the consent of the parents being obtained, in many cases, by the children themselves.

The reexamination recently made of two of last year's classes seems to justify the theory that boys and girls of the preindustrial age should be taught, primarily, by leading them to assume the responsibility of

TABLE 5.—MEDICAL RECORD: DEFECTS CORRECTED

	Tonsillectomy and Adenectomy	Adenectomy	Special Eye Examination	Glasses Fitted	Dental Care	Grand Total
Franklin School..	43	2	21	18	155	239
Dante School.....	8	..	4	4	12	28
Haines School....	..	..	3	2	7	12
Wells School.....	6	..	7	7	17	37
Montefiore School	5	..	..	..	...	5
Total.....	62	2	35	31	191	321

their own welfare. Not only have some of the members of these groups gained from 8 to 10 pounds during vacation, but also, on their own initiative, have had dental work done and tonsils removed. One boy assisted on a milk route in order that he might have 2 quarts of milk a day to drink.

31 North State Street.

Breast Nursing.—Nothing is more certain than that the employment of women in occupations away from home is conducive to infant mortality and to debility of their surviving offspring in later life. If we want to compensate for the losses we have sustained in the war, and to ensure that the next generation of men and women shall be strong and vigorous, we must see that there is a bounteous supply of mother's milk, and that the streams of that are not dried up at the source by conditions of labor that arrest and abolish the secretion of the mammary glands. The best ordered crèche is a wretched substitute for the maternal bosom.—Sir James Crichton-Browne, *Journal of State Medicine*, May, 1918.

A CASE OF RETROPERITONEAL CYST, PROBABLY ORIGINATING IN THE WOLFFIAN BODY

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Retroperitoneal cysts are of sufficient rarity to make the report of cases of some interest. They are to be distinguished from mesenteric and omental cysts, from echinococcus cysts, from dermoid cysts and from cysts of traumatic origin (encapsulated hematomas), any of which may be more or less retroperitoneal in location. Most cysts arising in the parovarium or epoophoron develop within the layers of the broad ligament, and are situated in the true pelvis. Should remnants of the wolffian body fail to descend to their usual site, however, a cyst developing from them may be situated higher, even up near the kidney.

PAROVARIAN CYSTS

The parovarium or epoophoron lies in the broad ligament between the ovary and the fallopian tube. It is formed by the remains of the wolffian body, and is composed of a longitudinal tube (Gärtner's duct) and transverse tubules which run from the hilum of the ovary to join the logitudinal tube. The hydatid of Morgagni, which is present in about 50 per cent. of females, is recognized as the lateral continuation of the longitudinal duct: it enters the broad ligament on its anterior surface between fallopian tube and ovary. Kobelt's tubules are the aberrant tubules of the wolffian body between the hydatid of Morgagni and those tubules which enter the hilum of the ovary. Any of these tubular structures may become the seat of cystic formation. Cysts arising from the hydatid of Morgagni and from Kobelt's tubules usually are small, are attached to the lateral border of the broad ligament by a more or less distinct pedicle, and seldom produce symptoms; they are to be distinguished from myxomatous and cystic degeneration of the fimbriae of the fallopian tube.

The typical parovarian cyst forms about 10 per cent. of all cases of ovarian cyst. It develops and spreads within the folds of the broad ligament (hence it is known as the "broad ligament cyst"), almost always unilocular, grows slowly, and seldom attains very great size. Its contents are clear, "like spring water," and the cyst wall is lined with a single layer of cylindrical epithelium. It is easily distinguished from an ovarian cyst because it is independent of the ovary, is covered by peritoneum, possesses a double layer of vessels on its surface (one belonging to the peritoneum and the other to the cyst wall), usually is easily nucleated (rarely forming adhesions), possesses no distinct pedicle, and almost invariably has the fallopian tube stretched out over its surface at some distance from the ovary.

REPORT OF CASE

History.—C. J., a woman, aged 26 years, who had one healthy child, living and well, was admitted to the Episcopal Hospital, July 31, 1919 (Dr. Ashhurst's Service). For the last three years she had had sharp pain in the right side of the abdomen, if she lifted a heavy weight, took a quick step up stairs or turned suddenly in bed. The pain was sharp, but not knifelike or excruciating, and was of only instantaneous duration. She had had no previous attacks of abdominal pain associated with vomiting, chills or fever, and no previous abdominal pain of any duration in her life. One week previous to entrance a mucopurulent vaginal discharge developed. (Her husband developed acute urethritis a few days later.)

July 31, 1919, at 10 a. m., while doing her housework as usual, the patient was taken with sudden severe abdominal pain, more severe on the right side. She went to bed, and

could not move, the pain was so severe. The pain was relieved by morphin given by the physician summoned. She vomited at the onset. She had no chill and did not feel feverish. She entered the hospital at 4 p. m., July 31.

Examination and Course.—There was pain and tenderness in the right abdomen, and spasm of the right rectus. A mass, the size of a lemon, was palpable in the region of the cecum. There was profuse mucopurulent vaginal discharge. Vaginal and rectal examinations were not made. An ice bag was applied locally with relief of pain.

August 1, no pain was present. There was slight local tenderness. Abdominal rigidity persisted. The mass was the same as on entrance. A vaginal examination was made, revealing retroversion and thickening of the tubes.

A diagnosis of chronic salpingitis and retroversion was made.

Operation and Result.—An operation was performed under ether. A mass was seen in the right iliac fossa, the size of a fetal head, rising above the umbilicus. Thinking an appendicular abscess was present, we made a transverse incision (15 cm.) at the level of the spine of the ilium. When the peritoneum was opened, a cystic mass appeared, feeling like a pregnant uterus but softer. The uterus was normal in size, retroverted and not adherent. There was salpingitis on both sides (subacute). The mass was retroperitoneal, extending from the brim of the true pelvis to below the kidney. The kidney felt normal. The mass had displaced the ascending colon and cecum to the right. The posterior parietal peritoneum slid over the cyst wall freely. The anterior parietal peritoneum was sutured to that which covered the cyst wall. The cyst was punctured, and fluid "like spring water" gushed out. The amount of fluid was more than 1 liter. The cyst wall was enucleated from the parietal peritoneum. There seemed to be no pedicle. The cyst wall was adherent at the point of eversion, and a ligature was applied here. A cigaret drain was inserted.

Smear and culture of the fluid disclosed no organisms or growth. Microscopic examination of the cyst revealed the cyst wall composed of fibrous tissue lined by a single layer of columnar epithelium.

August, 3, the drain was removed.

August 10, the incision was healed.

August 16, the patient was discharged from the hospital.

Six months later the patient stated that she had been free from abdominal pain since the operation, except for slight pelvic pain at the time of menses. A slight mucopurulent vaginal discharge persisted between periods.

ABSTRACT OF A SIMILAR CASE

LaPointe[1] recently reported a similar case in which there was a retroperitoneal cyst, the size of the head of a new-born baby, multilobulated but unilocular.

The wall was thin, almost transparent, like that of a parovarian cyst. In no point was there any solid tissue. He had removed this cyst from a woman, aged 34, who had undergone an abdominal hysterectomy ten years previously, for adnexal disease. The cyst was in the right flank, infringing on the iliac fossa by its lower pole and not quite reaching the false ribs by its upper pole. The mass was fluctuating, somewhat mobile, and dull to percussion. LaPointe thought at first that he had to do with a cyst developed at the expense of the right ovary, not removed at the former operation. But the true pelvis was perfectly free, and by pushing the tumor upward he found that it became prominent in the loin. He made a tentative diagnosis of hydronephrosis in a very low-placed movable kidney.

Accordingly he operated by the lumbo-iliac route, as if on the kidney; and up to an advanced stage of the operation he continued to regard the tumor as a hydronephrotic kidney. He had to traverse the fatty capsule of the kidney to expose the tumor and enucleate it. This was easily accomplished, except below and in front, where the cyst was adherent to the cecum and ascending colon, and to the neighboring peritoneum, which was opened and again closed. When enucleation was complete, the cyst fell out into his hands, for it had no pedicle. Then only did he perceive that it was not a case of hydronephrosis, but a retroperitoneal cyst; and he saw the normal kidney at the upper part of the cavity left by the removal of the cyst.

Although at this time no histologic examination of the tumor had been made, the diagnosis must rest between (1) a cyst of the mesonephron, or wolffian body, and (2) a cystic lymphangioma.

Later (p. 790) he reported that histologic examination of the cyst by Lecene showed it to be lined by cubical epithelium with slightly staining nuclei, and with protoplasm staining deeply with eosin. The appearance of the epithelium resembled closely that of the glomerules or canals of the wolffian body, as they are seen in the epoophoron or parovarium.

1. LaPointe: Bull. Soc. chir. Paris **45**: 728, 790, 1919.

INDOL TEST ON THE SPINAL FLUID FOR RAPID DIAGNOSIS OF INFLUENZAL MENINGITIS *

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BALTIMORE

Epidemics of influenza come periodically; but influenzal meningitis is endemic, and so far as is known has never acquired epidemic characteristics. It has been asserted by some [1] that, since the pandemic of influenza in 1918, there has been no increase in influenzal meningitis, as would be expected if *B. influenzae* were the etiologic agent. An increase in influenzal meningitis would not necessarily mean that *B. influenzae* is the cause of influenza, since various diseases follow in the wake of the later, as different kinds of pneumonia, and, in some of the army camps, epidemic meningitis.

Whatever may be the cause of influenza, gram-negative, nonmotile, hemoglobinophilic bacilli are found more frequently now than they were several years ago in normal throats and in the mouths of those with respiratory diseases. Whether this increase is actual or only apparent, owing to careful searching and better technic, cannot be decided now. The records of the Harriet Lane Home certainly indicate that in Baltimore, if not in other localities, there has been an increase in influenzal meningitis since the fall of 1918. During the six years preceding the pandemic, seven children with influenzal meningitis were seen in that clinic; since then—during two years—fifteen have been observed.

Jordan [2] was the first to demonstrate that certain strains of *B. influenzae* form indol. This work has been confirmed.[3] The last six strains of influenza bacilli isolated from the fifteen cases of influenzal meningitis mentioned above were found to be indol formers. This was a constant and striking feature, and early in the work it seemed possible that the test for indol might be used to make a rapid diagnosis of influenzal meningitis, as none of the other organisms usually causing meningitis, such as meningococci, pneumococci, streptococci or staphylococci, form indol. *B. coli*, which is an exceedingly rare cause of meningitis, is the only exception, and should not for obvious reasons be mistaken for *B. influenzae*. Later, six other meningitic strains of *B. influenzae* were obtained

* From the Department of Pathology and Bacteriology, Johns Hopkins University.

1. Jordan, E. O., in discussion on Irons, E. E.: Evidence For and Against the Use of Vaccines in the Treatment of Influenza With and Without Pneumonia, abstr., J. A. M. A. **74**: 623 (Feb. 28) 1920.

2. Jordan, E. O.: The Production of Indol by Certain Strains of the Pfeiffer Bacillus, J. A. M. A. **72**: 1542 (May 24) 1919.

3. Rivers, T. M.: Bull. Johns Hopkins Hosp. **31**: 50 (Feb.) 1920.

from New York laboratories, and five of these also were found to be indol formers.

Spinal fluids from four patients with influenzal meningitis have been examined a number of times. Ether extractions of the fluids were made and layered with Ehrlich's reagent (paradimethylamidobenzaldehyd, 4 parts; absolute alcohol, 380 parts; concentrated hydrochloric acid, 80 parts. An old rose color at the point of contact between the two fluids betrays the presence of indol). The test was negative when the fluids were first drawn; but, if the latter were incubated several hours, a faintly positive test was obtained. If the growth of the bacilli was aided by the addition of one drop of sterile blood to 10 c.c. of the spinal fluid before incubation, the reaction was accelerated and intensified, often strongly positive in three hours. If only a few bacilli and no blood were present, the test was weakly positive in twelve hours. Spinal fluids from other kinds of meningitis were tested as controls with negative results.

B. INFLUENZAE FROM CASES OF MENINGITIS AS INDOL FORMERS

No.	Source	Date of Isolation	Indol Formation
1.	Harriet Lane Home	1919-1920	+
2.	Harriet Lane Home	1919-1920	+
3.	Harriet Lane Home	1919-1920	+
4.	Harriet Lane Home	1919-1920	+
5.	Harriet Lane Home	1919-1920	+
6.	Harriet Lane Home	1919-1920	+
7.	Dr. A. Williams	1913-1914	+
8.	Dr. A. Williams	1913-1914	+
9.	Dr. M. Wollstein	1917	+
10.	Dr. A. Williams	1918	+
11.	Dr. A. Williams	1918	—
12.	Dr. A. Williams	1919	+

It might be of interest to note that the peritoneal exudates of animals killed by intraperitoneal injections of these meningitic strains of *B. influenzae* also gave a positive indol test.

SUMMARY AND CONCLUSIONS

1. Eleven of twelve meningitic strains of *B. influenzae* studied were indol formers.

2. An indol test on spinal fluids, as described, is a valuable aid in the rapid diagnosis of influenzal meningitis.

MUCOUS COLITIS *

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ST. LOUIS

It is not my purpose to discuss all the factors that have to do with the etiology and treatment of this very interesting condition. With but few exceptions every department of medicine has made an attempt to relieve or restore the itinerant patient to health. Group medicine is a step in the right direction, and let us hope that a brighter outlook for the patient sufferer is not far distant. Every member of the group should tabulate his findings, but under no condition should such be communicated to the patient until all have been consulted and a definite treatment outlined. Failure to observe this precaution is responsible for the making of many neurotics.

Until the advent of the enteroproctologist, the neurologist had practically an undisputed field of endeavor. This fact was largely due to the inability of the general practitioner to make a definite diagnosis. Failing to relieve his patient permanently, he would either resort to sudorifics or inform him that his condition was a neurasthenia. This furnished the neurologist an opportunity for theorizing and an exhaustive tabulation of symptoms. Being a man possessed of an analytical mind and a born diplomat, he succeeded in giving the pilgrim much comfort, and prolonged his stay with him until a new fad or fancy claimed his attention.

Physiologically the alimentary canal should be considered as an organ of alimentation and elimination. This involves the problem of nutrition as applied to the individual under observation. Sufficient time should be taken to learn his idiosyncrasies and the influence of his environment. Elimination yields readily to treatment if the patient is properly instructed.

The diseases of metabolism should claim our first attention. All constitutional diseases, such as tuberculosis and syphilis, must be properly treated and their influence as diagnostic and prognostic factors considered. Any mechanical factor, either extrinsic or intrinsic, interfering with the peristalsis or lumen of the intestine must be corrected. Abnormal positions of the female pelvic organs and adhesions resulting from surgical operations interfere with proper function and consequent incomplete defecation.

Infection plus incomplete elimination are the causes of most cases of mucous colitis. This infection may be constitutional or from local foci. The teeth, nose and throat should be the first to be investigated. Gallbladder infections are by no means rare. A chronic appendicitis is the rule rather than the exception. The relation of an infected lower bowel to mucous colitis and appendicitis is worthy of notice. In a tabulated list of 200 patients with mucous colitis who had formed the enema habit, 150 had had their appendixes removed, while many of the remaining fifty would no doubt have profited by parting with theirs. No amount of dietetic or local medication will be of any permanent value until the infection is located and removed. Cathartics add insult to injury, and are mentioned only to be condemned.

The following outline of treatment modified to suit the individual needs has been of value in my work: A nonprotein diet is selected with the object of fecal residue of nonirritating bulk rather than coarse, undigestible food. Bran should be ground fine and thoroughly cooked. It should be given with other foods and never be employed as an exclusive diet. The petroleum oils, however administered, are of doubtful value. They do not empty the bowel properly, and often act as a local irritant. An enema of 1 quart of 10 per cent. solution of magnesium sulphate, preceded by an antiseptic rectal irrigation, should be repeated until the solution is returned without feces. After resting for several hours, the patient is placed in the elevated Sims' position and a 10 per cent. solution of the oil of eucalyptus in olive oil administered and the patient requested to remain in this position for at least two hours. Local treatment is administered through the proctoscope by the aid of compressed air, as indicated by the existing pathologic condition. Cooperation and perseverance will relieve all patients and permanently restore many to physical well being. A complete change of environment is a valuable factor in most individuals.

University Club Building.

* Read before the Section on Gastro-Enterology and Proctology at the Seventy-First Annual Session of the American Medical Association, New Orleans, April, 1920.

ABSTRACT OF DISCUSSION

DR. BERTHA VAN HOOSEN, Chicago: During the past four years I have used postoperative rectocolonic hydrotherapy. Every patient on whom I have operated in the past four years has had two quarts of water introduced rapidly into the bowel (in not more than two or three minutes), while on the operating table. As soon as the patient has been placed comfortably in bed, three more quarts of water are put into the bowel, but more slowly. These patients have no intestinal irritability; they always retain all the water, and they do not have a bowel movement. They are comfortable; they sleep; they are not thirsty, and they are not troubled with gas pains.

DR. H. G. WALCOTT, Dallas, Texas: Unquestionably mucous colitis is an infection. In practically all of these cases there is retention of the feces, an irritation that sets up an inflammatory condition of the bowel, and leaves the bowel open to infection. I agree heartily as to the use of mineral oil. I have used agar-agar with much more benefit than the mineral oils. I have found so many of these cases secondary to chronic appendicitis. In the majority I have found a very spastic condition of the last portion of the transverse colon and of the descending colon. In fact, I have come to regard this as suggestive of chronic appendicitis. Explain to the patient that it is natural for some mucus to pass from the bowel, that a large quantity of it indicates a condition the same as an acute coryza. This relieves to some extent the anxiety, and has a psychologic effect which helps to bring about a cure.

DR. LOUIS J. HIRSCHMAN, Detroit: When a patient is referred to you with a diagnosis of mucous colitis, be absolutely sure that he has mucous colitis. The first symptoms of an early malignancy, or ulceration of the bowel, which may be either simple or specific, resemble closely those of mucous colitis, and many patients have been treated for "mucous colitis" until it was too late to operate for a malignant condition which really was the cause of the trouble. As far as mineral oil is concerned, the experiences of different men vary. As a very good substitute for mineral oil, and also for agar, let us rejuvenate old fashioned flaxseed tea. It is one of the smoothest, nicest things we can give our patients for mucous colitis. The use of agar-agar has not always been satisfactory to me. In such cases its use will result in the formation of hard boluses or there will be little masses of hardened agar-agar which look not unlike "soap" gallstones which we used to hear about some years ago, after the use of olive oil as a "liver cure."

DR. J. RAWSON PENNINGTON, Chicago: What was the nature of the infection? If mineral oil merely serves as a lubricant and passes through the system unabsorbed, does it not coat over the food and interfere with digestion?

DR. SIDNEY K. SIMON, New Orleans: The original conception of mucous colitis was that it was a neurosis of secretion, either of reflex origin, or due to some irritation of the neurons supplying the mucous glands of the large bowel. Distinction should be made between a so-called mucous colitis of this nature and a colitis with an excessive quantity of mucus, that is, an inflammatory condition. The treatment of each condition is entirely different. A pure mucous colitis should be treated along general lines as a functional disturbance. Let the lower bowel alone These individuals are usually highly neurotic; they have their minds centered on the lower bowel, and the constant irritation of irrigations of whatever nature, the repeated use of the proctoscope, aggravates rather than improves the condition. As in all other functional conditions, determination of the cause is of first importance. I have gotten very little result from local treatment of the lower bowel.

DR. RALPH W. JACKSON, Fall River, Mass.: If I mistake not, Dr. Stauffer said that, in his series of 200 cases, 75 per cent of the patients had been operated on for appendicitis. This is a reflection on the surgeon. The trouble is that they do not make an adequate examination of the rectum before or after the appendectomy, and in their anxiety to operate, they see only the appendicitis which is a result and a part of a general colitis, and not the cause of it. The removal of the appendix may or may not be justifiable, but the main condition is left unrelieved. A sigmoidoscopy would have prevented this and saved the surgeon's reputation.

DR. J. M. RECTOR, Columbus, Ohio: Proctologists suggest treatment of colonic and sigmoidal conditions by mouth, forgetting that the nearest direct route is through the rectum, and that all infections follow stasis, and that all colonic disease can be relieved, and elasticity, tone and function of the colon restored by colonic irrigation, and elasticity and tone of the colon restored by pneumatic gymnastics. These new methods of treating the colon directly by rectum are simple, but the technic must be understood to obtain results. The usual so-called high enema fills the debilitated colon with chemical and mechanical irritants, adding to the discomfort of the patient, and finally producing only partial incomplete evacuation of the colon. Colonic irrigation with the Turck rectal tube permits introduction, distribution and return of large amounts of physiologic sodium chlorid solution, bringing all stool and gas out through the tube. The treatment takes only ten minutes and leaves the colon clean and empty and the patient relaxed, warm and comfortable.

DR. FRANK SMITHIES, Chicago: It is difficult to distinguish cases of true colonic myxorrhea from cases of mucous colitis due to gross diseases of the colon. More than three years ago, I pointed out the fact that in many of these instances of chronic intestinal stasis, the sources of the trouble were localized patches of infection in the wall of the bowel itself, particularly in the intestine muscles, and these created local arrests in the proper peristaltic activity. It seems to me that in many of these instances the chronic appendicitis that has been mentioned as causing abnormal colon function is nothing more than an acute or subacute local manifestation of the infective process widely disseminated throughout the large bowel. Much of the so-called local treatment to the mucosa of the large bowel is not useful as it actually does not reach the place diseased, i. e., the muscle layer of the intestine. It only acts on a mucous membrane which is reacting to a deeper lying trouble. As to the "exercise treatments" suggested: If one wishes to "splint" an infected muscle to keep it still and so accelerate healing, it certainly is not a good plan to manipulate the affected parts by massage or by irritation by the rubber bag inflation. During the past six years I have had seven cases of cirrhosis of the large intestine due to syphilis, and the patients had been treated for mucous colitis for a long time without attempts being made to determine the cause of the colon disability. In syphilis, a spirochetemia, the virus lodges in the wall of the large intestine and may cause serious damage. We ought to protest against the widespread use of mineral oil by the layman, not because it may not help him, but because it often masks true conditions. It masks them so far, that, frequently, patients come to us for relief when they are beyond relief, as result of self-medication forced on them by advertisements printed in both the lay and the professional press. It is time to protest against this type of self-medication. It is dangerous. Advertisements of these "mineral oils" which are exploited in newspapers as "cure-alls" should not be permitted in ethical, medical publications.

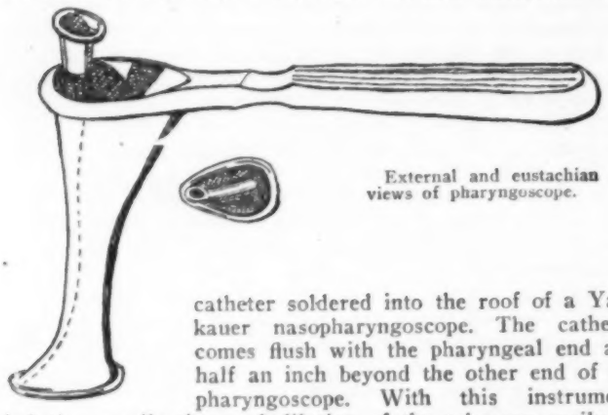
DR. WILLIAM H. STAUFFER, St. Louis: I am thoroughly in accord with the idea of a definite diagnosis for only by this means and by the proper interpretation of the pathology can we hope to get results by treatment. My object in suggesting a group diagnosis is to leave nothing undone. As to the nature of the infection: I have found the various streptococci and occasionally the colon bacillus. Constipation—a very relative term—is a symptom of some underlying condition, and will respond to treatment only when the pathology is removed. I am very much pleased with what was said with reference to mineral oil. I lose no opportunity in condemning the use of it. Olive oil is used only as a vehicle for oil of eucalyptus, and not for its therapeutic effect. As to the use of tubes, etc., I do not consider them safe, because you do not know the exact pathology and the lumen of the bowel, and in only 1 or 2 per cent. of cases can the tube be placed where it will be of any value. The dilator and the pack are unsafe, just as is the pneumatic proctoscope. It is a dangerous instrument. The local treatment should not be repeated frequently, and it should only be employed when there is actual pathology.

Clinical Notes, Suggestions, and New Instruments

CATHETERIZATION OF EUSTACHIAN TUBES THROUGH THE MOUTH

William Lapat, M.D., Houston, Texas

Because of various nasal obstructions it is sometimes impossible to pass a eustachian catheter through the nostrils. To handle these cases I have had a 4-inch eustachian tube



External and eustachian views of pharyngoscope.

catheter soldered into the roof of a Yankauer nasopharyngoscope. The catheter comes flush with the pharyngeal end and half an inch beyond the other end of the pharyngoscope. With this instrument, inflation, medication and dilation of the tube can easily be accomplished through the mouth.

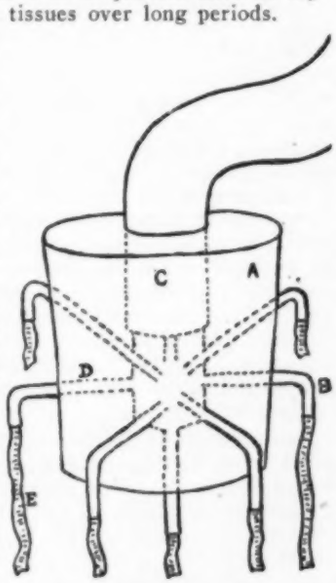
843 Kress Building.

UNIVERSAL MULTIPLE FAUCET ADAPTER

Joseph Felsen, M.D., New York

This device will be found useful to pathologists, photographers and others. Its purpose is to provide many individual streams of running water, and it is at present used in my laboratory to wash pathologic tissues over long periods.

It consists essentially of a large stopper (*A*) of cork or rubber bored to accommodate a number of L-shaped and straight glass tubes (*B*). For ordinary purposes a No. 34-38 cork of xxx or xxxx quality will do. By means of a cork borer a hole (*C*) large enough to fit snugly over the faucet is made about half the length of the cork. The hole is then deepened by a tube of about two sizes less bore. This leaves a little shelf on which the mouth of the faucet rests and a cavity into which the various glass tubes dip to receive the water issuing from the spigot. Holes are then bored into the side (*D*) to accommodate as many glass tubes as the size of the cork will permit. One or more holes may also be made in the bottom of the cork. The most convenient size glass tubing is 5 or 6 mm. cut into 2½ inch lengths, bent at right angles at about 1½ inches. This leaves enough to be inserted into the cork and yet project a suitable distance to receive rubber tubing (*E*). The ends are smoothed in a flame.



Multiple faucet adapter.

With this simple device I have been able, with a rather large cork, to use from ten to fifteen individual streams of water from one spigot.

If necessary, the entire device may be paraffined to prevent slight leaks. However, this is rarely necessary if a good quality cork stopper is used.

Special Article

TYPHOID FEVER AT SALEM, OHIO

For the past month Salem, Ohio, has been suffering from what appears to be one of the largest typhoid fever epidemics that have ever occurred in this country. Salem is a manufacturing town of about 10,000 population. For five years prior to 1920 there had been almost no typhoid, with the exception of eight cases in the autumn of 1918, shown to be due to a contaminated milk supply. No case was reported between August, 1919, and August, 1920.

The general sanitary conditions of Salem are about what are generally found in towns of this size. The water supply, about 800,000 gallons daily, comes from several groups of deep wells. The water is pumped from the wells and is run by gravity lines to a covered reservoir, from which it is pumped into the city mains. Analyses had been regularly made by the state board of health, and the supply has been regarded as excellent from a hygienic standpoint.

The milk supply is distributed through half a dozen dealers, two of whom deliver pasteurized milk—about two thirds of the total supply. This is a very creditable showing for a city the size of Salem. The city sewage is treated on intermittent sand filters, from which it runs into Beaver Creek, a tributary of the Ohio River. To a certain extent and particularly on the outskirts of the city, privies are in use. There are about 400 of these. Dug wells are present on about 200 premises, but many have not been used for drinking purposes. It is believed that close to 100 per cent. of the population have access to city water at some time during the day.

During the latter part of August and the early part of September of this year, three cases of typhoid fever are now known to have occurred. Following a rainy period in the latter part of September and particularly during the first part of October, enteritis was prevalent in the town. It was estimated that more than half the population was attacked. The reporting of this epidemic of enteritis by the local health authorities to the Ohio State Department of Health, about the middle of October, led to immediate investigation of the water supply, which was found to be polluted. An emergency chlorinating outfit was installed, October 20. Notices advising the boiling of drinking water were also sent out. There was no realization at this time of what was in store for Salem. Typhoid fever reports soon began to come in, and on November 10 a complete sanitary survey was made by a group of citizens under the direction of the representatives of the United States Public Health Service and the state department of health then on the ground. About 3,000 premises were visited during one day, and information obtained concerning sanitary conditions and the prevalence of typhoid fever. Further investigation of the water supply had also been made by the state department of health, in which it was found that one of the gravity lines connecting one group of wells with the reservoir was polluted. This line was immediately cut off.

The data obtained from the sanitary survey and the water supply investigations were sufficient to acquaint the authorities with the general facts of the epidemic. Aside from the three early typhoid cases referred to

above, the first cases appeared about October 1. From this date the number rose, reaching a maximum of fifty-four new cases, November 1, the peak of the epidemic. Since November 1 the number of new cases has rapidly declined, reaching a minimum, November 20. The total number of cases to November 20 was 785, with twelve deaths. The general distribution of the cases throughout the community and the known pollution of the water supply pointed definitely to a water-borne epidemic. Full data were obtained regarding the distribution of the cases on the several milk routes, but no facts were obtained to implicate the milk supply. The water contamination appears to have occurred in one of the gravity lines, but the detailed circumstances under which pollution occurred are still under investigation. It is too early to determine the possible part played in the later cases by contact infection.

There may be more cases and more deaths, but it is hoped that the measures instituted by the representatives of the Public Health Service and the state department of health and by the county health commissioner will serve to keep down the numbers. In their investigation and protective measures the authorities have been aided by complete cooperation from all, both inside and outside the town.

These measures have been many. The important step of chlorinating the water supply was taken early. The first emergency outfit has been replaced by a permanent chlorinator purchased by the town. The present dosage is about a half part per million. The state health authorities have made frequent examinations of the water supply and, since chlorination began, have found it to be satisfactory, although boiling of all drinking water is still recommended as a precaution. The whole milk supply is now being pasteurized. Milk delivered to houses in which there is a typhoid patient must be done in containers furnished at the house. Houses in which there are typhoid fever cases have been placarded, not as a quarantine measure but as a protection both of the house against visitors, and of the visitors by warning them of possible danger. Through a group of citizens, printed circulars have been distributed to all houses warning against the use of unboiled water and giving information as to disinfection of stools of patients, of urine, of clothes and bedding and of hands of attendants, and also advising antityphoid vaccination. All wells, except those on premises not connected with the city water supply, have been treated with chlorinated lime. A group of volunteer business men have disinfected all privies with the same substance. Under state supervision a corps of regular and volunteer nurses has been organized, and all patients needing nurses, whether they can afford them or not, have been looked after. A state branch laboratory has been established which has been placed at the service of all physicians for Widal tests, blood counts, etc. Experts on typhoid fever from other cities have been on hand to aid the local medical men in the treatment of severe cases. All food handlers in stores have been placed under supervision. On account of the necessity of keeping these stores in operation, certain rules have been adopted. If a case of typhoid fever exists in the home of a food dealer, the patient must either go to the hospital or the merchant remain away from his business. Vaccination of all food dealers has been required. Vaccination of all persons has been recommended, and it is estimated that about one fourth of the population has availed itself of the opportunity. Through the citizens' committee transportation for nurses has been supplied and a central eating place maintained. The local Red Cross has been instrumental in fitting up four emergency hospitals, three of which are already operating at full capacity. The effluent from the sewage filters is being chlorinated in order to protect communities using Ohio River water and riparian owners on Beaver Creek below Salem.

This epidemic is a great disaster for Salem. While the peak, so far as new cases is concerned, was reached about three weeks ago, the effects of the epidemic are in progress and the town will be fortunate, indeed, if the death toll remains moderate. There will for some time be economic problems, particularly among the poor, which are being looked into by the Red Cross.

The lessons for other communities to be learned from this epidemic are not new, but they are frequently forgotten. The most important is the necessity for constant supervision of every water supply, however pure its origin.

The representative of THE JOURNAL wishes to express his appreciation of the courtesies shown him by the representatives of the Public Health Service and the Ohio State Department of Health, and by the county health commissioner.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY.

BENZYL BENZOATE (See New and Nonofficial Remedies, 1920, p. 49).

Benzyl Benzoate-Van Dyk.—A brand of benzyl benzoate complying with the N. N. R. standards.

Manufactured by L. A. Van Dyk, New York, N. Y.

Benzyl Benzoate-Van Dyk 20 per cent.—Each 100 Cc. contains benzyl benzoate (Van Dyk) 20 Cc. and alcohol 80 Cc.

Benzyl Benzoate-Van Dyk 20 per cent. Aromatic.—Each 100 Cc. contains benzyl benzoate (Van Dyk) 20 Cc., oil of orange 0.74 Cc., alcohol 79.26 Cc.

BENZYL ALCOHOL (See New and Nonofficial Remedies, 1920, p. 27).

Benzyl Alcohol-Ipco.—A brand of benzyl alcohol complying with the N. N. R. standards.

Manufactured by Intra Products Co., Denver, Colo.

Ven Sterile Solution Benzyl Alcohol 4 per cent. 2 Cc.—Each ampoule contains Benzyl Alcohol 4 per cent. in physiological solution of sodium chloride, 2 Cc. The ampoules are made of neutral ("non-soluble") glass.

VARGOL.—A compound of silver and a derived albumin containing not less than 20 per cent. of silver.

Actions and Uses.—See general article Silver Preparations under Silver Protein Preparations, Argyrol Type, New and Nonofficial Remedies, 1920, p. 310.

Dosage.—Vargol is employed in from 10 to 25 per cent., and even stronger solutions.

Manufactured by The Heyden Chemical Co., New York. No U. S. patent. U. S. trademark applied for.

Vargol is prepared by the interaction of a solution of derived albumin, with a solution of a silver compound. The product is subsequently purified by dialysis.

Vargol occurs as greenish-black or black lustrous scales which are hygroscopic and have a slight characteristic odor.

Vargol is easily soluble in cold water and the solution may be heated without change and is unaffected by the usual reagents for silver, such as sodium chloride, iodide, hydroxide, etc. Solutions of Vargol on standing should show at the most only a slight sediment of a light brown color. The compound is decomposed by the action of strong mineral acids, after which silver may be identified by the usual tests.

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SATURDAY, NOVEMBER 27, 1920

AN EXTENSIVE OUTBREAK OF WATER-BORNE TYPHOID

It is many years since so extensive an outbreak of water-borne typhoid has been reported as the one at Salem, Ohio, recorded in another part of this issue.[1] The attack rate at Salem seems to have been very high, amounting to nearly 10 per cent. of the total population. The incidence among the population using the public water supply is probably considerably greater than this, since a number of the Salem houses are supplied with water from their own wells. The proportion of cases to water users is thus very nearly, if not quite as high as in the celebrated epidemics at Plymouth, Pa., and Ithaca, N. Y.

The history of the outbreak presents many points of similarity to several classic water-borne epidemics. The appearance of typhoid in the community on a large scale seems to have been preceded by many attacks of gastro-enteritis, as were the water-borne typhoid epidemics at Rockford, Ill., in 1912 and Quincy, Ill., in 1913. The evidence obtained by officials of the state department of health and of the U. S. Public Health Service seems to place responsibility definitely on the water supply. Prompt action on the part of the Ohio Department of Health in installing a chlorination plant, October 20, appears to have been effective in promptly checking the epidemic, and the situation in Salem seems now to be well in hand.

The mode in which the water became contaminated is being subjected to thorough investigation, and the whole story will doubtless eventually be brought to light. The main outline of what happened seems, however, to be reasonably clear at the present time. The public water supply is derived from deep wells, and the water, on being brought to the surface, is stored in a surface reservoir. In passing from the wells to the reservoir, dangerous contamination seems to have occurred, and evidence from bacterial analysis has appeared in the Salem papers implicating one particular gravity line.

It is plain that in spite of the enormous improvements effected in the character of public water supplies in this country by chlorination and sand filtration, the danger of water-borne typhoid is by no means a thing of the past. At least three sources of water contamination have occurred with disturbing frequency in the last few years: First, irregularities in the conduct of the chlorination process leading to inadequate treatment of a contaminated water, no other safeguard being provided on account of the reliance felt on the chlorin treatment. Second, the use of a dual water supply system by means of which factories and office buildings are supplied, usually for fire protection purposes, with water from a contaminated source; the valves intended to separate the private system from the public water supply get out of order or fail to work at times of pressure change and so permit the mingling of the polluted water with the otherwise safeguarded public supply. Third, improper handling of a good deep well water after it is brought to the surface, thus allowing for accidental contamination during floods or other unusual conditions.

It is in the latter class, where a good deep well water becomes polluted during transmission to the consumer, that the Salem outbreak, like the well-known Rockford outbreak, belongs. The detection of possible sources of danger is not always an easy matter, but there is no doubt that not all existing deep well water supplies are being looked after as carefully as they might be. The Salem disaster seems to call for renewed vigilance in the supervision of deep well water supplies.

1. Typhoid Fever at Salem, Ohio, Special Article, this issue, p. 1498.

ECOLOGY AND MEDICINE

"All life is controlled by two great forces, heredity and environment, and ecology is the science dealing with the environment." Ecology has generally been considered as the special concern of botanists and zoologists; at least they have been the ones who have most used the term as applying to a distinct department of their sciences; but obviously, from the definition, it is related to every science that touches life. Physicians have always recognized environment as of fundamental importance in all problems of medicine, and hence have unconsciously been ecologists, much like the man who, on taking up in his later years the study of grammar, was astounded to learn that he had always been using it. Therefore we ought not to be surprised to find that the opening contribution in the newly established official publication of the Ecological Society of America is on "The Control of Pneumonia and Influenza by the Weather," [1] and was written by a geographer rather than a physician. This deals with an analysis of deaths from pneumonia and influenza, as correlated with data on temperature and humidity for the same period. It has been pointed out by Greenberg [2] that in a group of eastern American cities, the number of deaths from pneumonia has a direct

1. Huntington, Ellsworth: Ecology **1**: 6, 1920.
2. Greenberg, David: Relation of Meteorological Conditions to the Prevalence of Pneumonia, J. A. M. A. **72**: 252 (Jan. 25) 1919.

relation to the outdoor temperature, and decreases systematically as the temperature rises. The same thing has been observed by Shaw in England with respect to influenza. Huntington also finds that the death rate from pneumonia and also from influenza, if the great epidemics are excluded, varies inversely with the temperature, which, of course, is merely an exact demonstration of the well known fact that these are cold weather diseases. Taken by and large, influenza begins with the frost, becomes severe when the temperature averages below freezing, reaches a maximum when the temperature is lowest, and then declines. It also seems that humidity has a pronounced influence, the pneumonia death rate being high when the humidity is low. "For outdoor temperatures of between 55 and 70 F., the death rate from lobar pneumonia remains at a rather uniform and comparatively low level so long as the relative humidity is not below 65 per cent.; but a drop of 20 per cent. from this humidity increases the death rate by at least one third." The health of Americans and Europeans is best with an average day and night temperature of 64 F. and relative humidity of 80 per cent.

Presumably, variations in climate may act on either the infectious agent or its victim. Seeking an explanation of epidemics, Huntington indulges in some interesting speculation based on the important studies of Woodruff on the life history of certain unicellular animal organisms, paramecia. These protozoa have the ability to multiply almost indefinitely without sexual reproduction, but the activity of reproduction occurs in distinct cycles. At the lowest point of the cycle there occurs a peculiar rearrangement of the cell structure, called "endomixis," which seems to serve as a stimulant analogous to conjugation, since its occurrence is followed by a marked increase in the rate of reproduction. Then, after a decided maximum has been attained, the stimulus wears off and the reproduction rate falls to a low ebb, after which a repetition of the same process of endomixis stimulates it again. The most striking feature of endomixis is the fact that it occurs simultaneously in unrelated races of paramecium even when they are kept under markedly different conditions of temperature and nutrition. This suggests that some unknown factor of the environment is responsible. As the paramecium has been found to be typical of living forms in general in many important respects, it may well be suspected that in this respect also it is typical of cell life. May not bacteria, which also multiply asexually, exhibit similar cyclic changes in reproductive rate that are responsible for the fluctuations in virulence that are such a striking feature of their behavior?

As for the modification of the incidence curves of endemic pneumonia and influenza in relation to changes in temperature and humidity, this presumably depends on the effects of the environment on the subject rather than on the parasite. And yet it is a strange fact that, unquestionable as is the lowering of resistance to certain infections under the influence of exposure to cold, the reason for such decreased protection has not been made clear. Foord [3] was unable to demonstrate that severe chilling of rabbits reduced either their capacity to form antibodies or the amount of existing antibodies in the circulating blood, nor did it cause hemorrhages or thrombosis in the lungs, which Aufrecht had supposed to be the explanation for the susceptibility of the lungs to infection after exposure to cold. The careful studies of Mudd and Grant [4] have demonstrated that chilling of the human body causes a reflex anemia of the mucosa of the mouth and pharynx with some fall of local temperature, rather than a hyperemia, as had been currently believed. Whether this transitory ischemia and lowered temperature of the mucous membranes can disturb the equilibrium between the host and bacteria sufficiently to permit of infection is, however, a matter that has not yet been determined.

3. Foord, A. G.: The Effect of Exposure to Cold on Antibody Production, J. Infect. Dis. **23**: 159 (Aug.) 1918.
4. Mudd, Stuart, and Grant, S. B.: Reactions to Chilling of the Body Surface, J. M. Res. **40**: 53 (May) 1919.

MEDICAL REFLECTIONS ON THE TYNDALL CENTENARY

The question of a possible spontaneous generation of living matter from the lifeless has been an important one in the development of modern medicine as well as in the domain of biologic theory. Historically, it has involved the origin and function of the bacteria and similar micro-organisms that concern the welfare of man. Can these agencies, which may so profoundly affect his well-being, arise without relation to pre-existing life? In this inquiry the very fundament of the germ-theory of disease is involved. The correct answer gave the justification for the development of antiseptic surgery, with which the name of Joseph Lister is indissolubly connected. Accepting Pasteur's demonstrations that the septic properties of the atmosphere are due to organisms suspended in it and that these cannot arise de novo, Lister proceeded, about 1867, to exclude these noxious agencies in the practice of surgery.

Pasteur showed that all the evidence advanced by the advocates of spontaneous generation was due to faulty technic; when the defects were corrected, no evidence remained of the generation of life by lifeless matter. There is no spontaneous infection, no spontaneous suppuration. In medical circles, the deserts of Pasteur need no defense; it is not so generally appreciated, however, that he was ably seconded in this triumph over an ancient controversy by the brilliant investigations of a physicist whose centenary is being celebrated this year. John Tyndall, born in Ireland in 1820, had found it necessary in the course of his experiments in the domain of physics to secure what

he termed optically pure air, that is, air from which all floating particles had been sifted. The story is told in Tyndall's "Floating Matter of the Air," a classic of scientific literature. It occurred to him that he might expose nutrient fluids to this particle-free air and nicely test the hypothesis of the spontaneous origin of life. The putrescible decoctions which he used showed no trace of spoiling or of organic life within them even after exposure of many months to the "pure" air of his apparatus, whereas they quickly decomposed when floating particles were admitted from the outside air. Spontaneous generation was again disproved.[1]

In a recent address at a meeting commemorating the Tyndall centenary, Prof. A. W. Smith[2] of the University of Michigan voiced the belief that an accident in the Alps may have turned Tyndall's mind directly to the investigations just referred to:

> Having taken a shower bath under the cascade of an Alpine stream, he was returning for his clothes when he slipped and the sharp granite pierced his shin. Dipping his handkerchief in the clear water of the stream he bound up the wound and limped to his hut, where he lay quietly for several days. There was no pain, and upon removing the bandage the wound was found to be clean and uninflamed. But it soon became inflamed, and he had to be carried on men's shoulders to Geneva, where for six weeks he was confined to his bed. About this time there was considerable dissension regarding the spontaneous generation of life, and Tyndall could not let such a question of fact pass by without adding his own clear logic to the discussion.

Tyndall also enriched bacteriologic technic by the method of sterilization by repeated heating. To most educated readers his name suggests the investigation of heat and other domains of physics; but physicians are mindful also of his achievements in the field of practical medicine.

1. The reader will find an interesting account of the classic experiment of Tyndall, together with a picture of his apparatus, in Locy, W. A.: Biology and Its Makers, New York, Henry Holt & Co., 1917.
2. Smith, A. W.: John Tyndall (1829-1893), Scient. Month. 11: 331 (Oct.) 1920.

EAR TESTS FOR AVIATORS

The selection of men most capable of becoming fliers was a problem that faced the authorities of all armies during the war. The probability of the increase of flying during the coming years makes the problem still of interest. How important the medical side of the subject is may be judged from the official statement that while 2 per cent. of fliers were incapacitated by the enemy, and 8 per cent. by mechanical shortcomings in the machine, 90 per cent. represents the number of fliers who met disaster from accident due to the flier himself. The British at the end of the first year found that, of the total number of accidents to fliers, 65 per cent. were due to physical defects of the pilots. When this was recognized and to some extent remedied, the next year showed a decrease to 20 per cent., and the next to 12 per cent. The problems involved were not grasped by the Allies till forced to their attention by the loss of valuable fighting material.

It is generally agreed that physical fitness with normal sight and hearing is essential. But one with these qualifications does not necessarily become a good flier. Anatomic perfection is rare, and physiologic function is easily upset. What are the anatomic perfections to be required, what the physiologic instabilities to be guarded against? It is well known how this country by elaborate tests carried out by selected experts sought to choose the fit and eliminate the unfit. That this was a wise and praiseworthy endeavor there can be but one opinion. What now concerns us is whether or not the tests devised during the war period can be beneficially adjusted from the experience there gained: whether or not we overemphasized some points. The United States government published a volume[1] full of valuable information in which the complete examination of candidates for the flying corps is given. The chapter dealing with the aural examination is written with commendable prudence. The authorities acted wisely in giving the examinations used by their allies. It is by a comparison of methods that national shortcomings can often be recognized.

Not a few volumes and many articles, several semi-official, have appeared in various countries, in which attempts are made to answer the question, How best by medical examination can there be picked the men most likely to make good fliers? It is remarkable that where we should have expected unanimity of opinion—namely, as to the part played by the vestibular portion of the internal ear—unanimity of opinion is conspicuously lacking.

The American opinion is thus expressed:

> When flying through the air, on what does the aviator rely in order to maintain his equilibrium and that of the aeroplane? Can he rely on sight? Hardly, for when he is sailing through the clouds or darkness, his eyes cannot give him the slightest information about his position in space—not even whether he is right side up or upside down. . . . In order to preserve that wonderful accuracy necessary in controlling such a delicate mechanism as the flying machine, he relies preeminently on his ear-balance sense.[2]

The opinion of the English authorities is given by H. Graeme Anderson:[3]

> It has been assumed that a sound equilibration and muscle sense is essential in flying, so that the aviator would be conscious of his position in space, realize at once any deviation therefrom, and correct these quickly. But in a fog it has been found almost impossible to detect any deviation in a flight. Time and again aviators coming out of dark clouds or fog have found themselves flying one wing down, and it has been recorded that some have flown upside down without knowing it. Thus, it is obvious that most of the impressions which control balance in flying come through the eyes.

These are not the opinions of irresponsible individuals; the book from which the former is quoted has its preface dated from the office of the chief surgeon, Aviation Section, Washington, D. C.; the latter work has an introduction by the Secretary of State for the Royal Air Force.

1. Air Service Medical, War Department, Washington, D. C., 1919.
2. Jones, J. H.: Equilibrium and Vertigo, Philadelphia, 1918, p. 24.
3. Anderson, H. G.: The Medical and Surgical Aspects of Aviation, London, 1919, p. 33.

Not less unsatisfactory are the statements in regard to the testing of candidates:

> The turning test (nystagmus, past pointing and falling) quickly separate the obviously fit from the unfit. Candidates showing normal responses are accepted, candidates showing markedly subnormal responses are immediately rejected.[4]
>
> One who shows good responses in the turning chair shows good detection of movement in the air; one who shows poor responses in the turning chair shows poor detection of movement in the air.[5]

In his report to the English Air Investigation, Mr. Sydney Scott, F.R.C.S., concludes that "the reactions to rotation may be excessive in some individuals and suppressed in others, but in neither case do the reactions of the semicircular canals serve to indicate an airman's probable flying ability."

The French opinion is well expressed by Dr. Guilbert: "On the subject of proper equilibrium, it is especially custom which will give these qualities. Violent reactions and poor equilibration at the start will often disappear with training, for one becomes accustomed to sensations of being in the air, as to all others." He emphasizes the importance of the reaction time of the individual to visual, auditory and tactile impressions. "It is the instantaneous transformation of a passing sensation to precise muscular contractions, but of infinite variability, with the purpose of constantly reacting to the invisible movements of the atmosphere and with all the other difficulties which may occur. This capacity, as it seems to me, is, above all, the result of training." The Italians also lay stress on the reaction time[6] and, in their physical examinations, on nasal breathing.[7]

The necessity of rapid reaction to stimuli from peripheral organs of sense is recognized by all authorities, though possibly it is more emphasized by the French and the Italians. It is the training of these reactions to occur with greater rapidity and to become almost subconscious in their workings that is aimed at in various exercises and hoped for by preliminary flights. But still unanswered is the fundamental question, What is the rôle of the canals in flying, and how should our aviators be chosen?

Is this uncertainty due to a lack of appreciation of what constitutes equilibrium or balance? On the one hand, the ear is not a balancing organ, though it is an important part of the peripheral mechanism. It senses alterations of posture relative to gravity and automatically sets the motor (efferent) mechanism to work to rectify the displacements or to maintain the posture (equilibrium). Sight and the tactile sensations play also a part. Balancing results from the coordination of all these afferent impulses. The reactions from the labyrinth are normally automatic, and the information given may not reach consciousness. On the other hand, the English writers too readily belittle the rôle of the labyrinth. It is an important organ to sense displacement; and, whether or not we are conscious of its messages, these messages normally are effective. Are they not stressing the conscious knowledge of our relation to the outside world acquired by sight, forgetting the ever-present unconscious activity of the ear in maintaining our relation to the vertical? It would help clarify this unsatisfactory state of our knowledge were writers to formulate more definitely the physiologic factors involved, their coordination and their effective responses, together with the influence on this coordination of psychic factors.

4. Jones, J. H.: Equilibrium and Vertigo, p. 28.
5. Air Service Medical, p. 258.
6. Air Service Medical, p. 132.
7. Anderson, H. G.: The Medical and Surgical Aspects of Aviation, p. 32.

Current Comment

SEX AND BLOOD PRESSURE

It has long been realized that age is a factor which must be taken into consideration in giving an answer as to what constitutes the normal arterial blood pressure. There are also variations that seem to be associated with sex. In examining the numerous data collected by Alvarez[1] at the University of California, it appears that the women before the menopause represent almost exclusively a type endowed with a comparatively low blood pressure. There is far greater uniformity and less variation in the blood pressure readings of large numbers of them than is true of men at the same periods of life. Alvarez has therefore suggested that perhaps the ovary is in some way able "to cover up or hold latent the tendency to hypertension which we will presume the women inherit equally with the men." When the ovarian function fails, therefore, the natural tendency for the appearance of higher arterial pressures soon makes itself appreciated. Perhaps this hypothesis will help to explain the assertion sometimes made that hypertension often develops early in women who show signs of insufficient ovarian function, such as scanty and painful menstruation, sexual anesthesia, male distribution of body hair, infantile uterus, etc. At any rate, the phenomena of hypertension appear to be suppressed in women as long as the ovaries function well. On the other hand, the statistics show that the large increase in the incidence of hypertension comes ten years later in men than in women. Apparently, Alvarez concludes, a strenuous life has less to do with this disease than has the quieting down of the sexual functions.

ARE THE PARATHYROIDS AND THE THYROID INTERRELATED?

The identity of the parathyroid glands seems at length to be fairly well established, although their individuality and independent function still remain somewhat obscure. There was a time when they were looked on simply as embryonic thyroids. Even Gley, to whose investigations so much of our current knowledge of the parathyroids is due, long supported the

1. Alvarez, W. C.: Blood Pressure in University Freshmen and Office Patients, Arch. Int. Med. **26**: 381 (Oct.) 1920.

view that under suitable conditions, such as thyroid extirpation entailed, they could develop into thyroidal tissues. The possibility of a vicarious function between the thyroid and parathyroid structures was further suggested by the assertions of Vincent [1] and his collaborators. They based their belief on the apparent discovery that, after removal of the thyroid itself, enlargement of the parathyroids may occur with the formation of colloid material between the rows of cells. Vincent and Arnason [2] have recently reinvestigated carefully the problem at issue, without finding any experimental support for the view that parathyroids left behind after thyroidectomy become converted into thyroid tissue. Vesicle formation could not be detected. The complete functional distinction between parathyroids and thyroids may therefore continue to be maintained.[3] The so-called endocrinologists are eagerly, almost feverishly, searching at present for interrelationships between the endocrine structures. Thyroid-parathyroid correlations remain unproved; likewise the postulated relationships among the parathyroid, the pituitary and the suprarenal glands. Scientific medicine is liable to suffer by the experimentally unwarranted attempts to conjure with such obscure and undemonstrated interplays of endocrine function.

INFLUENCE OF ANTITYPHOID INOCULATION DURING MOBILIZATION ON THE GENERAL TYPHOID RATES IN THE UNITED STATES

In discussing the annual summary of typhoid fever in the large cities of this country for the year 1919, we [4] called attention to the likelihood that the army inoculations were probably responsible in a considerable degree for the relatively low typhoid death rate for 1919. This suggestion seems to receive confirmation from the information now becoming available. If such an effect existed, analysis should show that the rate in white men manifested greater proportionate reduction than the rate in white women between 20 and 35. The experience of the industrial department of the Metropolitan Life Insurance Company indicates that this is what has actually happened.[5] The typhoid death rate in 1919 for white men between 20 and 35 was 64 per cent. below that of the annual average for the same group in the six years 1911-1916, while the rate for white women showed a decline of only 47 per cent. The death rate for white men in this age group for the six year period 1911-1916 was 22.3, and for white women, 14.9 per hundred thousand. The rate in 1919 for white men was 8.0, and for white women, 7.9. Since a large proportion of the men had the benefit of army and navy antityphoid inoculations, and the women did not, the greater decline in the typhoid rate among these men must be ascribed to the army and navy antityphoid inoculations. It will be exceedingly interesting to observe whether the rate in this age group rises again after a few years, since, with even the most vigorous attempts to obtain a revaccination of these persons, it is hardly to be anticipated that more than a very small proportion will respond to the appeals for such revaccination.

1. Vincent, S., and Jolly, W. A.: J. Physiol. **32**: 65, 1905; **34**: 295, 1906.
2. Vincent, S., and Arnason, J. S.: The Relationship Between Thyroid and Parathyroid, Endocrinology **4**: 199 (April-June) 1920.
3. Paton, D. N., and Findlay, J.: Quart. J. Exper. Physiol. **10**: 214, 1916-1917.
4. Typhoid a Vanishing Disease, editorial, J. A. M. A. **74**: 678 (March 6) 1920.
5. Med-Mil. Rev. **3**: 106, 1920.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Hale County Appoints Health Officer. — Dr. Alexander MacKay, Toronto, Ont., has been chosen health officer for Hale County, with headquarters at Greensboro.

Sanatorium Fire Causes Casualties. — In a fire which destroyed Campbell Sanatorium at Bay Minette, November 14, two women were burned to death. The loss is estimated at $25,000.

Tuscaloosa Hospital Site Selected.—The committee on location of the Tuscaloosa City Hospital, for which a subscription of $80,000 has been raised and a municipal bond issue of $50,000 has been authorized, has selected a site in the rear of Smith Hall, at the university. The location was chosen so the University of Alabama may have ready access to the hospital.

CALIFORNIA

New County Hospital Completed. — The Solano County Hospital in Suisun Valley was formally opened by a public inspection, November 7. The building was recently completed at a cost of approximately $160,000 and will shortly be occupied by the patients now housed in the old hospital. A special building for the treatment of tuberculous patients and a pest house are included in the group.

Southern California Society Elects. — At the sixty-third semiannual meeting of the Southern California Medical Society, held in Los Angeles, November 5, under the presidency of Dr. Walter V. Brem, the following were elected officers: Dr. Charles L. Bennett, San Dimas, president; Drs. Edgerton Crispin, Los Angeles, and Lyell C. Kinney, San Diego, vice presidents, and Dr. William Duffield, Los Angeles, secretary-treasurer.

COLORADO

Vote on Initiative Measures. — Of the initiative measures submitted to the voters of Colorado, November 2, three were of special interest to physicians. The bill providing for an appropriation for a psychopathic hospital and the bill increasing the mileage tax for higher educational institutions were passed, while the bill to establish a separate licensing board for chiropractors was defeated.

DELAWARE

Medical Society Acts in Nurse Shortage.—At a recent meeting of the Medical Society of Delaware in Wilmington, a resolution was passed suggesting the more rapid advance of students to the grade of nurse after a less intensive course of study. The object of the resolution is to relieve the shortage of nurses.

ILLINOIS

Hospital in Danger of Destruction.—A large landslide from the edge of a 40-foot bluff threatens to precipitate the entire Southern Illinois Hospital for the Insane at Menard into an adjoining abandoned quarry. Work on the construction of an abutment to stop the slide has been begun by the state engineering department.

Personal.—Dr. James Warren Van Derslice, Oak Park, was elected president of the American Medical Milk Commission at the annual meeting held in Louisville, November 19.——Dr. Charles A. Robbins, Dixon, was elected grand master of the Illinois Odd Fellows at the annual convention held in Springfield, November 17.

INDIANA

Hospital Project Voted Down.—At a special election the proposition to erect a $100,000 hospital at Tipton was defeated by the voters of Tipton County.

Councilor District Society Meeting.—At the annual meeting of the Eighth District Medical Society held recently in Muncie, Dr. Charles L. Botkin, Farmland, was elected president, Dr. Charles A. Sellers, Hartford City, vice president, and Dr. Clay Ball, Muncie, secretary-treasurer. Dr. Ernest M. Conrad was appointed to serve as councillor to fill the vacancy caused by the resignation of Dr. General W. H. Kemper. The annual conference for 1921 will be held in Muncie.

LOUISIANA

Public Health Service Hospital Damaged by Fire.—A fire early in the morning of November 13 destroyed three wards, the kitchens and mess halls, the storeroom and offices of the United States Public Health Hospital at Camp Stafford, three miles north of Alexandria. The loss entailed is estimated at between $250,000 and $300,000. More than one hundred tuberculosis patients were removed without injury from the burning buildings to other wards.

State Tuberculosis League Plans Sanatoriums.—At a meeting of the parish chairmen of the Louisiana State Anti-Tuberculosis League, held in New Orleans late in October, it was resolved to undertake a campaign for the establishment of a chain of sanatoriums throughout the state. The various parishes were requested to apportion a percentage of the proceeds from the annual Christmas seal sales for the erection of a sanatorium in Rapides Parish on land now held in trust by the tuberculosis commission. Orleans Parish will concentrate efforts on the establishment of a hospital for the treatment of patients in the advanced stage of tuberculosis, a site for which has already been secured.

MAINE

Dr. Grenfell Addresses County Society.—At a meeting of the Cumberland County Medical Association held at Augusta, November 4, Dr. Wilfred T. Grenfell, medical missionary to Labrador, spoke on his work in the Labrador missions. A committee consisting of Drs. Stanley P. Warren, Owen Smith and John F. Thompson was appointed to solicit funds in furtherance of the work.

MARYLAND

Quarantine Station Returned to Government.—Preparations are under way for the remodeling and enlarging of the Quarantine Station near Curtis Bay in anticipation of the expansion of marine traffic in the port of Baltimore. The city authorities will shortly transfer the quarantine site to the federal government.

Diphtheria at Locust Point.—About forty-five houses at Locust Point are under quarantine for diphtheria. The disease is confined largely to schoolchildren, many of whom have been found to be carriers through examinations of cultures from infected throats and noses. Under instructions from Dr. John F. Hogan, assistant commissioner of health and chief of the Bureau of Communicable Disease, cultures have been taken from every child attending school at Locust Point, resulting in the detection to date of thirty-five carriers.

MASSACHUSETTS

Personal.—Dr. Joseph M. Scanlon has been appointed eye, ear, nose and throat specialist at the Tuberculosis Hospital, Lynn, to succeed Dr. Ernest P. Fuller, resigned.

Physician Fined for Performing Illegal Operation.—It is reported that Dr. Edward J. Frothingham, Boston, recently pleaded guilty to a charge of performing, about a year ago, an illegal operation and paid a fine of $750 in the superior criminal court in Salem.

MICHIGAN

Municipal Judge Requests Psychopathic Clinic.—Judge Harry B. Keidan has requested the city council of Detroit to appropriate $17,500 for the establishment and maintenance of a psychopathic clinic in connection with the new municipal court. It is contemplated to employ a chief psychiatrist and two assistant psychiatrists.

Typhoid Epidemic at Hillsdale.—During the week ending November 6, forty-five cases of typhoid fever were reported from Hillsdale. The source of contagion has been traced to milk delivered by a dealer afflicted with typhoid fever. The state health authorities are cooperating with the local health board in fighting the epidemic.

MINNESOTA

Southern State Association Meeting.—The annual meeting of the Southern Minnesota Medical Association will be held at Mankato, November 29 and 30, under the presidency of Dr. Herbert Z. Giffin, Rochester. Headquarters of the Association will be at the Elk's Club. The annual banquet will be given on the evening of November 29 at Masonic Hall.

MISSISSIPPI

City Electors Favor Hospital.—The voters of Brookhaven have registered approval of the proposal to issue city bonds to the amount of $40,000 for the building and equipping of a hospital.

Hospital Purchased by Methodist Commission.—At a meeting of the Mississippi Methodist Hospital Commission, held recently in Hattiesburg, it was decided to purchase the Kings Daughters' Hospital, Hattiesburg, which includes a site of about four acres and several hospital buildings. The commission plans to use the present buildings until the conference is ready to erect a more commodious structure. H. G. Hawkins has been appointed superintendent of the hospital.

MISSOURI

Personal.—Dr. William T. Coughlin, St. Louis, has been appointed director of the department of surgery of the St. Louis University Medical School.——Dr. Vilray P. Blair, St. Louis, was severely injured in an automobile accident, November 12.

St. Louis Postgraduate Meeting.—Dr. Harlow Brooks, New York, and Dr. Dennis R. Crile, Chicago, delivered lectures before the postgraduate meeting of the St. Louis Medical Society, November 22 and 23. The subject of Dr. Brooks' address was "Syphilis of the Heart," while Dr. Crile spoke on "The Conservative Treatment of Fractures."

Belgian Physicians Visit Medical School.—A party of distinguished Belgian physicians visited the Washington University Medical School, November 5 and 6, for the purpose of gathering data on teaching methods at that institution. In the party were Dr. Albert Dustin, professor of pathologic anatomy at the University of Brussels; Dr. Rene Sand, head of the social service work in the hospitals of Belgium and secretary of the Hoover Foundation for Medical Education in Belgium; Dr. Antoine De Page, the noted surgeon, and Dr. Jules Bordet, director of the Pasteur Institute of Brussels. They were accompanied by Dr. G. Canby Robinson, dean of the Vanderbilt University Medical School.

NEW JERSEY

Health Societies to Hold Meetings.—The forty-sixth annual meeting of the New Jersey Sanitary Association will be held in Lakewood, December 3 and 4, under the presidency of Dr. A. Clark Hunt. Headquarters will be at the Laurel-in-the Pines.——The annual meeting of the Health Officers' Association of the State of New Jersey will be held in Lakewood, December 3.

NEW MEXICO

County Health Officers Appointed.—Dr. Frederick H. Busby, formerly field director of the International Health Board, has been appointed full time health officer for Bernalillo County and city health officer of Albuquerque.

NEW YORK

Shortage of Help Hits State Hospitals.—The October report of the State Hospital Commission shows that the thirteen state hospitals, and particularly those in the metropolitan districts, are suffering from shortage of help. The reason for this is said to be because the state has fixed the salaries too low to command competent help and has failed to provide satisfactory housing. It is thought that these conditions are reflected in a decreased number of recoveries and an increased number of accidents. At the Brooklyn State Hospital it was found that recoveries had declined almost 8 per cent.

New York City

Tribute to Dr. McGinnis.—The Woman's Hospital Society gave a dinner in honor of Dr. L'H. McGinnis, November 16, at the University Club, in recognition of his many years of service in the hospital.

Personal.—Dr. David E. Hoag has been appointed associate neurologist of the New York Post Graduate Hospital and lecturer on nervous and mental diseases at the New York University and Bellevue Hospital Medical College.

Investigations at the Rockefeller Institute.—The following diseases will be made the subject of special study at the Rockefeller Institute for Medical Research during the coming winter, and patients suffering from these diseases will be admitted to the extent of the hospital facilities: acute lobar pneumonia and other acute pulmonary infections, measles, acute rheumatic fever, cardiac disease, nephritis. Physicians desiring to send patients suffering with these conditions may communicate with the hospital by telephone or by personal application to the resident physician.

NORTH CAROLINA

Medical Society Meeting.—The Seaboard Medical Society, composed of physicians of eastern North Carolina and tidewater Virginia, will hold its annual meeting in Elizabeth City, December 7, 8 and 9, under the presidency of Dr. Cyrus Thompson, Jacksonville. A popular public health meeting will be conducted in the high school auditorium in connection with the annual convention.

OHIO

Hospital Clinic Opened.—St. Elizabeth's Hospital, Dayton, has opened its new enlarged clinic for treatment of diseases of the eye, ear, nose and throat.

Smallpox at Tiffin.—More than half the public schools in Tiffin, including the high school, have been closed under orders of the state board of health owing to an epidemic of smallpox.

Personal.—Dr. Harold Higgins has been appointed assistant professor of pediatrics in the University of Cincinnati Medical College under provisions of the endowment fund recently donated by Mrs. Mary Emery.

Visiting Physician Addresses Academy.—At the meeting of the Academy of Medicine at Cleveland, held in the medical library auditorium, November 19, Dr. Hugh Cabot, Ann Arbor, delivered an address on the "Non-Tuberculous Infections of the Kidney."

Holmes Chair in Surgery.—It has been determined to establish a Christian R. Holmes chair of surgery at the University of Cincinnati Medical College, in place of the chair in medicine as originally planned. The medical college already has a chair in medicine in memory of Dr. Frederick Forchheimer, and as it is not desired to change its name, the chair of surgery will be established instead, under the endowment fund of $250,000 received early in the year from the Carnegie Foundation.

OREGON

Public Health Service Hospital Planned.—It is reported that a Public Health Service hospital for disabled veterans of the World War from the states of Oregon, Washington, Montana, and Idaho will be established at Portland in the hospital building started several years ago, but never finished. The building will be rushed to completion and will be turned over to the federal government.

PENNSYLVANIA

Health Clinic Opened.—Westmoreland Hospital, Greensburg, has equipped two rooms for a tuberculosis and general public health clinic to be conducted by the state department of health. Dr. James F. Trimble, county medical director, will be in charge of the clinic which will be open every Tuesday afternoon from 2 to 5.

Harrisburg Plans Welfare Federation.—Thirty-six welfare agencies and institutions, seven civic organizations, four public boards and commissions, and two public officials have been requested to join a proposed Harrisburg welfare federation. As practically all of these agencies conduct special campaigns for funds, it is proposed to conduct one joint campaign allowing the donors to designate the particular agencies that shall receive their gifts. A common council is provided under the federation plan.

Philadelphia

Appointment in Public Welfare Department.—Dr. Randolph Faries has been appointed physician-in-chief of the Department of Public Welfare, succeeding Dr. Blair Spencer, who resigned recently to become medical head of the Philadelphia Health Council.

Industrial Surgeons Meet.—Industrial surgeons and physicians have been called to meet in Philadelphia, December 17, for discussion of problems and prospective legislation relating to industrial medicine. This is the first time the conference has been held in Philadelphia.

Health Lecture Under University Auspices.—Dr. Henry R. M. Landis, director of the clinical and sociologic department of Henry Phipps Institute, delivered the third public health lecture of the course given by the School of Hygiene and Public Health of the University of Pennsylvania, November 20, on the subject of "The Reconstruction of Underdeveloped Children."

SOUTH CAROLINA

Tuberculosis Camp Assured.—More than $8,000 having been subscribed for the establishment of a tuberculosis camp in Cherokee County, a site has been obtained near Draytonville mountain and a building committee has been appointed to make arrangements for the early erection of the camp.

Hospital Notes.—The building known as the Spartanburg City Hospital of Spartanburg has been purchased by John B. Cleveland of Spartanburg and presented to the Georgia Cleveland Home for Aged Women. The purchase includes the nurses' home.——Construction work on the Joseph Thompson Memorial Hospital at Charleston is well under way and it is thought the hospital will be completed within several months. When ready for use the present Riverside Infirmary will be given over for use as a nurses' home. The new institution is being erected at a cost of $103,800 and will have forty-six patients' rooms, in addition to office and operating rooms.

TENNESSEE

New Hospital Opened.—The Elizabethton Memorial Hospital was recently opened for the reception of patients. Dr. John O. Woods is president of the institution.

City Hospital Appoints Superintendent.—Dr. Wilson L. Vickers, Nashville, has been appointed superintendent of Nashville City Hospital to succeed Dr. William F. Fessey, resigned.

TEXAS

Bubonic Plague Reported.—The eighteenth case of bubonic plague at Galveston since the discovery of the malady in June was registered with the death of a negro boy, November 13.

UTAH

Health Office Uses Contagious Disease Map.—A large map to be used for demonstrating health conditions in the city of Ogden has been hung on the wall at the city health office.

Personal.—Dr. George F. Harding, for many years a member and secretary of the State Board of Medical Examiners, has tendered his resignation to Governor Bamberger. It is the avowed intention of Dr. Harding to reside at Santa Monica, Calif.——Dr. Leslie S. Merrill, Ogden, has been reappointed as physician for the county public schools.

WISCONSIN

County Selects Tuberculosis Sanatorium Site.—A site has been selected for the proposed tuberculosis sanatorium at Hamilton according to an announcement of Dr. John W. Coon, advisor to the committee.

Public Lectures on Mental Hygiene.—Dr. Elizabeth Woods delivered a public course of four lectures on the psychiatry of the normal and subnormal mind, under the auspices of the Milwaukee Health Department and the state department of education. The lectures were held in the public library, Milwaukee, November 16, 19, 23 and 25.

CANADA

University Notes.—Dr. Herbert Eldon Roaf, Toronto, has been appointed to the chair of physiology at the University of London, England. Dr. Roaf held the Johnston Colonial Fellowship in the University of Liverpool, 1902-1905, and was for three years in charge of the pathologic laboratories at Cairo.——Prof. Irving H. Cameron, for many years professor of surgery in the medical department of the University of Toronto, has relinquished that chair, and Dr. Alexander Primrose has been appointed to succeed him temporarily.

Personal.—Dr. J. E. McCorvie, Toronto, has accepted a position with the Mayo Clinic, Rochester, Minn.——Dr. John

Hunter, Toronto, is spending the winter at Los Angeles, Calif. ——Much sympathy is felt by the medical profession of Toronto for Dr. Price Brown, for many years a specialist in diseases of the eye, ear, nose and throat. Six years ago Dr. Brown lost the sight of one eye, and last summer he submitted to an operation on the remaining eye. Unfortunately, hemorrhage set in and the eye had to be removed, leaving Dr. Brown totally blind.

GENERAL

Research Information Bureau.—The National Research Council has established an information service as a clearing house for scientific and industrial research. On request, information will be supplied concerning research problems, progress, laboratories, equipment, methods, publications, personnel, funds, etc. Ordinarily inquiries will be answered without charge, but in case of unusual difficulty in securing information, the inquirer will be supplied with an estimate of cost. Requests for information should be addressed, Research Information Service, National Research Council, 1701 Massachusetts Avenue, Washington, D. C.

Reserve Officers' Training Schools.—It is announced that officers' training schools will be established immediately at Washington University, St. Louis, Jefferson Medical College, Philadelphia, Rush Medical College, Chicago, and Johns Hopkins University, Baltimore. Officers of the Army Medical Corps will be appointed shortly to take charge of the course of instruction and the training of students for reserve commissions will be inaugurated as soon as they are assigned to these posts. Other colleges and universities will be added during the winter and efforts will be made to induce all medical colleges that can comply with the regulations to establish the military course.

United States Mortality Statistics.—A summary of the mortality statistics for the death registration areas of the continental United States shows that 1,096,436 deaths occurred in 1919, a rate of 12.9 per thousand population, the lowest rate recorded since the establishment of the registration area. Organic diseases of the heart accounted for 10.2 per cent of the deaths, tuberculosis in all forms for 9.8 per cent., and pneumonia and influenza for 17.3 per cent. The rate for diphtheria and croup, 1.1 per cent., was higher than for any other contagious disease. The rate for deaths from diarrhea and enteritis in children under 2 years was 44.2 per hundred thousand of population.

Rockefeller Foundation Gift to France.—The Rockefeller Foundation has given to France complete control over the elaborate antituberculosis organization established in the department of Eure-et-Loir at a cost of 4,000,000 francs. The organization consists of twenty-four dispensaries, four complete isolation services, a departmental sanatorium and laboratory. The system will serve as a model for similar organizations to be established by the government throughout the country. The Rockefeller Foundation is now assisting in the antituberculosis campaign in thirty-eight of the eighty-seven departments and it is expected that this work will be continued for two years more.

License Revoked.—The last act by which the medical profession has been cleared of a notorious imposter was enacted when, October 19, the California board revoked the reciprocal license which in 1915 it granted to Philip Dyment. When Dyment was licensed in Georgia in 1914, he claimed graduation from the Homeopathic Medical College of St. Louis in 1891. An investigation conducted by the Council on Medical Education of the American Medical Association revealed the fraudulent nature of his credentials. The fact that twenty-five years had elapsed after the date of graduation before he attempted to secure a license was in itself suspicious. His name was not found among either the graduates or the students of the college named. None of his supposed classmates remembered him. He held a certificate from a former dean but disclosures showed that on an earlier occasion this dean had issused a fraudulent certificate to one G. B. B. Larkeque, who, according to the evidence, was the one who hired a Dr. L. G. Wright to impersonate Dyment at the Georgia examination. A comparison of Dyment's writing with that on the examination papers further showed that someone else had written the examination for him. The final link in the evidence was secured through the wife of the physician who impersonated Dyment. Dyment was summoned to appear before the Georgia board in 1919 but failed to appear. Definite action was postponed to comply strictly with legal procedure, but, June 10, 1920, his license in Georgia was revoked.

LATIN AMERICA

Brazilian Child Welfare Congress.—The *Brazil-Medico* states that nearly 2,300 persons have already sent in their subscriptions for the first National Child Welfare Congress to be held at Rio de Janeiro next year.

Protest by Haitian Physicians.—The syndicate of the Corps de Santé of Haiti, consisting of physicians and pharmacists, has protested against the action recently taken by the National Public Health Service in prosecuting three physicians, charged with having failed to report cases of smallpox.

Sanitary Inspection of South American Ports.—Asst. Surg.-Gen. J. H. White, U. S. P. H. S., after the close of the sixth Sanitary Conference of the American Republics, to be held in Montevideo, Uruguay, will proceed to Valparaiso, Chile, and other points on the West Coast of South America, via Panama, for the purpose of investigating sanitary conditions at the various ports.

Prizes by Academy of Medicine of Havana.—The Academia de Ciencias Médicas of Havana announces the following prizes for the year 1921: President Gutiérrez' prize, 400 pesos, for the best work on the necessity of a National Formulary; Gañongo prize, 200 pesos for the best work on any medical subject; Gordon prize (physiology), a gold medal, for the best work on correlation of the endocrine glands. The papers must be sent to the secretriat of the academy (calle de Cuba, número 84-A) before March 31, 1920. They must be original, must not have been published before, and may be in Spanish, English or French.

FOREIGN

Septicentennial of the University of Montpellier.—The University of Montpellier was founded in the thirteenth century, and elaborate preparations are under way for the celebration of its approaching seven hundredth anniversary.

Spanish Medical Strikes.—Medical strikes are apparently becoming established custom in Spain. The last strike was declared by the medical society of the province of Zamora, because the municipal authorities were not paying the salaries of town physicians promptly.

Danish Ambulance for Poland.—The ambulance that has been organized at Copenhagen to go to Poland is nearly ready to start. The Danish committee sent a number of ambulances during the war to the different belligerent countries. Dr. P. N. Hansen is in charge of this one.

Poland Appoints Typhus Director.—Dr. Emil Godelowski has been appointed by the Polish ministry of health to take charge of the campaign against the typhus plague. He has been given the widest powers and the resources of the American Red Cross have been placed at his disposal in an endeavor to prevent further spread of typhus fever.

Hungary Excludes Foreign Students from Universities.—The *Deutsche medizinische Wochenschrift* publishes a notice from Prague to the effect that the minister of the interior has decided not to admit to matriculation in the universities applicants from Austria, Germany and the Ukraine, on account of the existing overcrowding of the universities and the dearth of housing facilities and of food.

The Masius Prize.—The Société médico-chirurgicale of Liége has founded a triennial prize in honor of the services rendered by the late Professor Masius at the University of Liége. The first award of 1,000 francs will be made at the close of 1923 for the best clinical or experimental work on internal medicine. For details address the secretary of the society at Liége, Dr. Delrey.

Bequests to Medical Organizations.—The will of the late Dr. Lloyd Roberts, Manchester, England, leaves £5,000 to the Royal Society of Medicine and to St. Mary's Hospital, Manchester; £3,000 to Manchester Royal Infirmary and to the Royal College of Physicians, London; £2,000 to St. David's College, South Wales, and to the Medical Society of London, and the residue of the estate to University College, Bangor.

Cholera in China.—Cholera is adding to the general distress of the famine-stricken provinces of China, including Chihli, Shangtung, Honan, and Shansi. It is estimated that between 25,000,000 and 30,000,000 inhabitants of China face death by starvation during the winter. In the town of Hwai-an, with a population of 100 families, three persons have died from cholera, and similar reports have been received from other districts. The number of suicides has greatly increased.

Choice of Profession. — The *Münchener medizinische Wochenschrift* relates that a series of addresses have been

made recently by representatives of different professions and trades to the pupils of the Dresden high schools, aiming to aid the pupils in their choice of a career. Dr. Faust spoke for the medical profession, his theme being "Who should become physicians? How can I become a physician? and, What prospects have I as a physician?" The third question gave him a chance to emphasize the overcrowding of the medical profession and the pecuniarily unfavorable condition of its members. He concluded with the words "Those seeking a means of support, keep away from the study of medicine. Those who believe themselves actually called to it, pitch in."

Deaths in the Profession in Other Countries

Dr. **E. Faivre,** professor of clinical medicine at the University of Poitiers and on the editorial staff of the *Gazette des sciences médicales* of Bordeaux.——Dr. **A. L'Huillier,** assistant at the laboratory of legal medicine at Geneva, Dr. **L. Delaloye,** a prominent surgeon at Monthey, and Dr. **P. Narbel** of Lausanne, Switzerland.——Dr. **J. A. Lagerman** of Stockholm.——Dr. **J. Crespin,** professor of hygiene, in the medical school at Algiers in Africa.——Dr. **Cailleux,** mayor of Ignaucourt, France.——Dr. **L. Vella,** president of the Trentino Medical Society.——Dr. **A. Benedetti,** docent of ophthalmology at Rome.——Prof. **E. Crissiuma,** professor emeritus of descriptive anatomy at the University of Rio de Janeiro and a successful surgeon, died in October while on a visit to Paris, aged 68.——Dr. **A. González Prats,** professor of medical pathology at the University of Barcelona.——Dr. **A. Guilhem,** professor of forensic medicine at the University of Toulouse.

Government Services

Public Health Service Tuberculosis Centers

Special facilities of the diagnosis and study of tuberculosis have been installed in the Public Health Service hospitals at Fort McHenry, Md.; Fox Hills, N. Y., and St. Louis. Other centers will be established as clearing houses for the placement of tuberculosis patients in a given section. At each of these centers tuberculosis specialists will be on duty.

Investigation of Hazards of High Temperatures

A country-wide investigation of the industrial health hazard of work under high temperature will be undertaken by the Public Health Service with the object of determining means for making conditions more endurable and for the prevention of diseases. A preliminary investigation was made three years ago, but the war compelled its postponement. The Surgeon-General has assigned the task to Mr. B. J. Newman, in charge of industrial hygiene.

Results of October Examination for Army Medical Corps

The October examinations for the selection of additional commissioned officers in the Medical Corps of the Army resulted in the passing of 115 candidates, whose names will shortly be made public through the office of the Adjutant-General, War Department. At the present time the Medical Corps requires 577 additional officers to complete its personnel as provided by the Army Reorganization Act passed last June. While the October examinations were considered successful, according to the Surgeon-General, there were not as many applicants as had been anticipated.

Public Health Service Hospital for Fifth District

U. S. Public Health Service Hospital No. 62 at Augusta, Ga., will be formally opened, November 20, when forty patients suffering with mental and nervous diseases will be transferred to the institution. After extensive alterations have been completed the capacity of the hospital will be 250. The hospital will serve the fifth district of the Public Health Service, including North Carolina, South Carolina, Tennessee, Georgia and Florida. A clearing house for military patients has also been established in the district at Public Health Service Hospital No. 48, Atlanta, where patients with mental and nervous diseases will be kept under observation before being assigned to the particular hospital that seems best suited in a given case.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Oct. 30, 1920.

The Nation's Health

The first annual report of the newly established ministry of health by the chief medical officer, Sir George Newman, constitutes an important survey of the problem of national health. The business of the ministry, he says, is not to build for today or tomorrow, but for the future. It represents a reform in central health government, the establishment of a means rather than an end. Moreover, the ministry is merely a part of an organized scheme for the national health which includes (1) a central supervising department; (2) local authorities or representative bodies for the carrying out of its policy; (3) voluntary societies and agencies, and (4) an educated people able and willing to practice the way of health. But these four factors depend on the advance of our knowledge of the science and art of medicine. Hence there is a fifth factor, the physician—in some ways the most important and essential. On him for several years the state has been steadily imposing specific duties with regard to the communal health, though it has been slow to associate him closely with its operations. One of the principal objects of a ministry of health is to secure his cooperation as an integral and active force in the physical well-being of the nation.

From a survey of the available data, Sir George Newman concludes that while here and there great gains have been made in the health of the nation, and though the death rate is declining, there remains a serious amount of preventable sickness and disablement, the tendency of which must be to undermine the physical stamina of the people, reducing their capacity and shortening their days. The broad deductions are: 1. There is a steadily falling birth rate, which in 1919 reached the figure of 18.5 per thousand. 2. There is a death rate of 13.8 which shows a steady decline at all ages. 3. The infant mortality (89 per thousand births) is one of the lowest recorded, but there is still much unnecessary loss of life of mother and child. 4. Although the number of cases of infectious disease exceeds half a million a year, the primary burden is relatively light, yet the ultimate results are grave. 5. Tuberculosis, measles, acute rheumatism and influenza are still prevalent and, with venereal disease, lead to much disablement and mortality. 6. There is also a large mass of disability and incompetency from relatively trivial sickness, much of which is neglected, and thus leads to more serious conditions. 7. The systematic medical inspection of schoolchildren has revealed a substantial degree of physical and mental impairment. 8. The expenditure on sickness and disablement benefit indicates that a serious amount of time is lost from employment, amounting to not less than 200,000 years per annum for the insured population alone.

The trend of the death rate in England and Wales is steadily downward. Previously to the nineties of the last century the decline, apart from infant mortality, chiefly affected the lower ages; but recently there has been an improvement in the middle years of life, which are economically of the most value. Typhus has almost disappeared; typhoid has greatly declined as a contributor to the death rate. But a heavy life tax is paid every year in tuberculosis, cancer and diseases of the circulatory, respiratory and nervous system. Smallpox showed 28 deaths in 1919, the highest number since 1905, when the number was 116. In 1919, 42 per cent. of the total deaths took place under 45 years of age. This is a matter largely within human control. It is impossible to assess exactly the relative value of the numerous

factors that have contributed to the remarkable fall in infant mortality, but improved sanitation in its widest sense, and particularly infant welfare work, has been a determining cause. The result cannot fail to bring with it a higher standard of national life and health. The remarkable decline in typhoid fever continues to constitute one of the hopeful signs of preventive medicine. In 1869, the year that this disease was distinguished from typhus, the mortality was 390 per million in England and Wales; in 1918 it had fallen to 26. The decline is attributed largely to improved water supply, sanitation, and the protection of food.

Sir George Newman lays stress on the need of adequate provision for the care of mothers and children. Much has been achieved, but the services which have been organized are not yet complete. The death rate of women in childbirth remains approximately what it was twenty-five years ago. There are upward of 3,000 deaths a year: a mortality almost entirely preventable. There is a large volume of abortion, miscarriage and stillbirth, and of ophthalmia neonatorum, much of it avoidable. A substantial number of the 700,000 mothers of 1919 were so injured or disabled in pregnancy or childbirth as to make them chronic invalids and bring them in large numbers to the gynecologist—an excessive burden of preventable invalidity. The problem can be met only by wide, continuous and persistent effort in every district. In addition to the supervision of pregnancy, midwifery, maternity homes, home nursing, health visitation, and infant welfare and institutions, it includes sound administration, and a wise use of maternity benefit. The state cannot afford to be careless or negligent of motherhood. There must come a time when civilization means that no child-bearing woman is without adequate and skilled assistance, and no infant without a birthright of health. That time Sir George thinks should come first in England among all nations. Much time last year was spent in inquiries and investigations preparatory to further organization of the attack on tuberculosis. More provision is urgently needed for the training and occupation of consumptives, and for village settlements.

Effect of Shorter Hours of Work on Output and Health

The annual report of the chief inspector of factories and workshops for 1919 shows that the shortening of hours, perhaps more than any other recent improvement in industrial conditions, has had a beneficial effect on operatives. Better time-keeping has been the result of discontinuing work before breakfast. There is also less absence for sickness and other reasons. In one large factory the average daily number of absentees numbered forty some years ago; now, with a forty-four hour week, the average number has dropped to ten. Less fatigue and overstrain are found in factories, and although more men are employed in the engineering and allied trades, the accident list has not increased. Increased leisure has been used by many workers for educational advantage. The reports of various inspectors disclose wide differences as to the effect of shorter hours on production. When the production depends almost entirely on the speed of machinery, as in cotton and woolen spinning, the output is reduced in a proportion nearly corresponding to the reduction of hours. In other machine operations which call for constant alertness, such as weaving, output has not suffered to this extent, and in exceptional cases has been scarcely affected. In a third class of processes, in which output is largely or entirely dependent on the exertion of the worker, there is frequently no loss in production. Indeed, in one wholesale tailoring establishment an increase of 40 per cent. was reported; but this was partly due to reorganization. In a boot factory in which the hours were reduced from fifty-two to forty-eight a week there was a considerable increase in output. Unfortunately, a few of the reports indicate an exceedingly unfavorable result in some work where the shortening of hours has been followed by a reduction in the hourly rate of production; and for this, no adequate explanation, as a rule, is given.

PARIS

(From Our Regular Correspondent)

Nov. 5, 1920.

Population Statistics of France

The *Journal officiel* recently published the population statistics of France for 1919, based on the complete figures for the seventy-seven uninvaded departments and those of the Ardennes, the Meuse and the Vosges. The departments of the Aisne, Marne, Meurthe-et-Moselle, Nord, Oise, Pas-de-Calais and Somme are not considered in the report.

The year was characterized by a great increase in marriages, a slight increase of births and a marked falling off of deaths, as will be apparent from the figures for the eighty departments, summarized in the subjoined table:

	1918	1919	Increase (+) or Decrease (—) Per Cent.
Marriages	177,822	458,363	+ 157
Divorces	8,121	11,933	+ 47
Births	399,041	413,379	+ 3
Deaths	788,616	635,694	— 19

To these figures should be added those from Alsace-Lorraine: marriages, 23,977; births, 28,192, and deaths, 25,556.

The Price of Quinin

Considerable astonishment was occasioned by the fact that during the month of June, when foreign exchange showed a decline of from 20 to 25 per cent., the price of quinin salts rose markedly. It was lately demonstrated that the cause for this lay close at hand. Up to June 15, 1920, the manufacturers of quinin salts were working for the government under control of the Service de santé militaire, on whose account they sold to the druggists the quinin salts necessary for the conduct of their business. These sales were made at prices fixed by the government, and were based on the purchase of great quantities of cinchona during the war when the foreign value of the franc was almost at par. Since June 15, the manufacture of quinin is no longer under state control, and cinchona is now being quoted at Amsterdam prices; and because of the unfavorable exchange rate, quinin will probably be quite expensive for a long time to come.

Poisoning by Barium Sulphate Given for Roentgenoscopy

Barium sulphate has almost completely replaced bismuth in roentgenology. Dr. Japiot of Lyons has called special attention to the fact that barium sulphate is not absolutely safe unless it is chemically pure. The presence of soluble salts is particularly dangerous in view of their toxicity. Thus, a man who had taken 200 gm. of barium sulphate, preparatory to a roentgenoscopic examination, within three hours had an attack characterized by chills and profuse sweats, retrosternal pain, swooning, and thready pulse. For twelve hours he was in a very restless state. Fortunately the greater part of the barium was vomited; the rest was evacuated within twenty-four hours. Analysis revealed that the barium contained a large percentage of soluble salts, especially chlorids and carbonates.

Two similar cases were reported a short time ago by Bensaude. A soluble barium product, consisting of the sulphid and carbonate, had been delivered by error; one patient died within ten minutes, the other within twenty-four hours. Although such serious accidents are comparatively rare, Japiot thinks that they impose on the physician the obligation to prescribe the chemically pure sulphate, and that the druggist should be absolutely sure of the purity of the product.

Death of Delage

French science has suffered a great loss by the death of Dr. Yves Delage, professor on the Paris faculty of science. He was born at Avignon, May 13, 1854, and started his professional education as a medical student in Paris; but the brilliant lectures of Lacaze-Duthiers at the Sorbonne won him over to zoology. He entered Lacaze-Duthiers' laboratory, and from the start gave evidence of painstaking proficiency in experimental research. He received the degrees of Doctor of Medicine and Doctor of Science almost simultaneously, and in 1883 joined the faculty of science of Caen as professor of zoology. After serving in this position for a short time he returned to Paris at Lacaze-Duthiers' request, and at the age of 32 succeeded his master as titular professor of zoology at the Sorbonne, later becoming associate director of the marine laboratories of Roscoff and Banyuls. It was not long before his work stamped him as a leader among contemporary zoologists. In his early investigations in morphology, Delage used the microscope almost to excess, and in 1895 the first symptoms of a serious eye disease made themselves felt. Delage's ardor and his love for science kept him from taking the complete rest which was necessary, and the ocular condition gradually became aggravated so that by 1904 he was almost totally blind. This did not restrict his scientific activities, however, but merely diverted his attention to other subjects. In 1895 his biologic publications began to appear, culminating in his great work on the structure of protoplasm in relation to the theory of heredity and to the major problems of general biology, which constituted a critical study of the main theories on the nature of life, contained an exposition of his own theory, and had a definite influence on future biologic investigations. Only lately he issued an extensive work on the psychology of dreams. Delage was a member of the Académie des sciences and president of the International Society of Biology.

BERLIN

(From Our Regular Correspondent)

Oct. 28, 1920.

The Campaign Against Tuberculosis

The enormous increase in the morbidity and mortality rates of tuberculosis has naturally induced our health authorities, physicians and welfare directors to renew their fight against this plague with great vigor. The mortality in some localities, especially the principal cities, is practically double that in 1913, when 95,000 persons died of tuberculosis. It is estimated that the present rate entails a loss of 160,000 lives annually from this disease.

Although 2,500,000 marks were appropriated in the national budget for various measures designed to combat the spread of the disease, this sum does not begin to suffice for the purpose, especially with the current increase in the cost of the necessities of life. Private donations are therefore expected to assist in the cause, though there is a considerable falling off in gifts to public welfare due to the shrinking of fortunes and the decrease of average annual income. The scientific investigations receive support from the "Robert Koch-Stiftung zur Bekämpfung der Tuberkulose," which has an endowment of approximately 1,250,000 marks. Grants from the income of this fund have made possible the continuation of the researches of several prominent investigators. Only a very few of the sanatoriums could afford to erect new buildings to meet the increased demand for accommodations. Germany now has 160 sanatoriums for pulmonary tuberculosis with 17,600 beds, 172 children's hospitals with 14,300 beds, 120 forest convalescent hospitals, seventeen forest schools, thirty-three other convalescent homes, eighty-two observation hospitals, and 317 special hospitals, special wards in general hospitals, invalid and nursing homes for the tuberculous.

The laboring classes have lately begun to take a very active interest in the campaign against this disease which is making heavy inroads in their ranks. Thus, the miners have agreed to work overtime and to donate their overtime pay to the funds for tuberculous children. At a recent general meeting of the committee for the prevention of tuberculosis the advantages of a proposed national tuberculosis act were freely discussed. Professor Neufeld, director of the Robert Koch Institute, emphasized the point that because of the chronic character of the disease, medical measures are far more important than purely administrative sanitary requirements. Only when it is desirable to eliminate a source of contagion should official compulsion be considered unavoidable, including obligatory notification and segregation, especially of persons whose occupations entail constant contact with children. Another speaker, a public health official, considered compulsory notification absolutely necessary, the more so as the prevalent overcrowding of homes greatly increased the possibility of contagion on all sides.

The Treatment of Pulmonary Tuberculosis

The first fall meeting of the Berlin Medical Society, held October 20, was characterized by the opening of a series of essays designed to be an extensive debate on the methods of treating pulmonary tuberculosis. The attendance was unusually large owing to a lively discussion of the results obtained from the Friedmann "cure."

The first speaker was Prof. F. Klemperer, director of the medical division of a Berlin hospital, who recounted his personal experiences with protein therapy, the partigen therapy of Deycke and Much, and the Friedmann "cure." Klemperer called attention to the fact that this last measure is based directly on the practice of injecting the tubercle bacillus from human cases, as recommended by Behring in the classic essay for which he was awarded the Nobel prize in 1901. This historic remark was made necessary by the attempted apotheosis of Friedmann by some of his uncritical followers, including Professors Dührssen and Schleich, not to mention the inspired daily press. These would acclaim Friedmann as the original discoverer and would rank him higher than Jenner in the history of medicine.

VIENNA

(From Our Regular Correspondent)

Oct. 28, 1920.

American Help for Medical Institutes and Medical Men

A sum of 7,000,000 kronen, collected by Dr. Lange of Chicago, was sent recently to Professor Paltauf of the medical faculty of Vienna, with the suggestion that it be used for the purpose of obtaining materials and apparatus for the institutes of pathologic anatomy, bacteriology and roentgenology. Dr. Lange, who for some time was president of the American Medical Association of Vienna, has promised to continue his endeavors to assist our rather handicapped scientific institutes. Another group of men showed their appreciation of the work done in the medical life of this city by helping to improve the economic conditions of university lectures and teachers of medicine in Vienna. A check for £10,000 was sent by a relief committee to Professor Pirquet, formerly a Johns Hopkins professor at the University of Baltimore, for this purpose. This grant was used by Professor Pirquet in the manner desired, and he at the same time conducted scientific research by means of it. The grant was used to supply articles of food to such families as were found on examination of the nutritional conditions by the nem system of Pirquet to be lacking in the necessary food supply.

About 200 families (nearly 700 persons) were examined. On an average, children lacked from 1 to 3 kilonems, and adults from 2.5 to 3 kilonems daily in the quantity of the food allotted to them by the state and obtainable only by the food tickets. The difference thus found was filled up by the grant. The quantity of foodstuffs thus distributed averaged 154 kilonems a month for each family and consisted chiefly in condensed milk, fat and lard, flour, beans, rice sugar and corned beef. After three months, controls were made with the result that an increase of weight varying between 4 and 8 kg. per person were observed. Care was taken that families with children under 14 years of age received more milk, as well as women who were pregnant or had infants at the breast.

Death of Professor Weichselbaum

After having completed recently his seventy-fifth year of age, Prof. A. Weichselbaum, the teacher of pathologic anatomy, succumbed to the attacks of a neoplasm from which he had been suffering for a few months. By his death Vienna loses one of its best known men, and medicine sustains a severe loss. He was a pupil of the old military medical school, from which so many eminent men originated, and turned his attention early to the study of morbid anatomy, a field at that time not too much favored by success. In the early eighties, Robert Koch published his general bacteriologic discoveries. Weichselbaum at once took the matter up in his enthusiastic manner, alone in Vienna, and with all his energy he became a defender of Koch. At that time, he discovered the cause of pneumonia (*Diplococcus pneumoniae*) and of the dreaded cerebrospinal meningitis, which he called *Meningococcus intracellularis*. One of the chief achievements of Weichselbaum was the anatomic and bacteriologic investigation of endocarditis, and the clearing up of the hitherto mysterious etiology of valvular disease. In his method of work he united the new system of the laboratories with the old descriptive anatomy, thus enabling the modern development of morbid anatomy. While especially interested in the study of pestilence and tuberculosis, he did not neglect the investigation of the changes caused by constitutional diseases and diabetes, and public hygiene owes to him a great measure of the progress achieved within the last decade. For more than thirty years he was "the" pathologist of Austria, a teacher of unequaled qualities to whom numbers of students from all countries flocked. He succeeded in forming a school of modern scientists, now distributed through all German-speaking universities, and his institute where excellent histopathologic and bacteriologic work was done in such high perfection is no doubt well known to numerous American physicians who have studied in Vienna.

Charge of Cruelty Among Military Medical Officers

The various dangers encountered by the members of our profession during the war are clearly illustrated by the report of the committee for investigation of "military misconduct" recently published. After the upheaval of the Austrian state, a number of committees were formed to seek persons guilty of gross misconduct toward subordinates, for the old military system had really treated the population "en canaille." Among others several prominent members of our profession, chiefly neurologists, psychiatrists and pathologists, were accused by former soldiers of having pronounced many men as fit for active service after having treated them with the utmost cruelty in the hospitals. Complaints were made especially about the electric treatment of malingerers, of "shocked" soldiers and similar conditions. After an exhaustive investigation and the hearing of numerous witnesses from both sides, the committee dismissed the charges with a verdict that all the accused physicians had done their duty with utmost reliability, humanity and according to their best abilities. The electric treatment was never proved to have been cruel, although in some cases some of the younger physicians had adopted it in a way not necessarily justifiable. The modern treatment by psychanalysis and hypnotism was not used as much as was deserved, in the opinion of the committee, and some representatives of these modern teachings were in distinct opposition against the use of faradic currents in "shock" or in detection of swindlers. Nevertheless it was clear that the physicians had to proceed according to certain rules laid down in their military instruction and to which they were bound by the compulsions of military service. These rules were not up to date when war broke out and they had not been adjusted to the progress of science.

Marriages

EDWARD FOY UZZELL, Atlantic City, N. J., to Miss Marion Elizabeth Gunter of Fredericton, N. B., September 8.

OSWALD EVANS DENNEY, Carville, La., to Miss Bertha Olive Harris, at New Orleans, La., October 27.

JAMES FRANKLIN HUGHES to Miss Lucy Pace, both of Osawatomie, Kan., September 9.

JOHN C. HOLZBERGER to Miss Elizabeth Laura Bartel, both of Brooklyn, November 2.

CHARLES LARKIN CONROY to Miss Florence E. Strassheim, both of Chicago, recently.

GEORGE D. J. GRIFFIN to Miss Edna Mary Healy, both of Chicago, November 17.

Deaths

Joseph Melanchton Aikin ⊕ Omaha, Neb.; State University of Iowa, Iowa City, 1887; aged 63; secretary-treasurer of the Nebraska State Medical Association and managing editor of the *Nebraska State Medical Journal;* delegate from that constituent association in the House of Delegates of the American Medical Association at several annual sessions; professor of nervous and mental diseases in the University of Nebraska, Omaha; a specialist in psychiatry; died at the Methodist Hospital, Omaha, November 18, following a second gastrojejunostomy for the relief of a practically complete stenosis of the pylorus. He was an unselfish, earnest worker in advancing the usefulness of the medical profession, and his life was dominated by high moral ideals.

Walter Benejah Chase ⊕ Brooklyn; Medical School of Maine, Brunswick and Portland, 1867; aged 77; consulting gynecologist and obstetrician to Long Island College Hospital, consulting gynecologist to Nassau and Jamaica hospitals, and surgeon to Bethany Deaconess Hospital; president of Kings County Medical Society in 1890; one of the founders and in 1892 president of the Brooklyn Gynecological Society; a member of the American College of Surgeons; who served in the One Hundred and Second Regiment, New York National Guard, during the Civil War; died; November 15, from cerebral hemorrhage.

Philander Davis Sims, Chattanooga, Tenn.; University of Nashville, Tenn., 1856; aged 92; a member of the Tennessee State Medical Association; at one time mayor and for many years health officer of Chattanooga; a veteran of the Civil War; for sixty-four years a practitioner of Chattanooga; died, November 8, from senile debility.

Edmund Franklin Bronk ⊕ Amsterdam, N. Y.; Albany (N. Y.) Medical College, 1884; aged 62; attending physician of the City Hospital; health officer of Amsterdam from 1901 to 1906; treasurer of Montgomery County Medical Society in 1907; a member of the board of health since 1895; died, November 2.

Clyde Francis Horner ⊕ Champaign, Ill.; Northwestern University Medical School, 1898; aged 45; Captain, M. C., U. S. Army, and discharged May 14, 1919; died, November 3, from a gunshot wound of the head, self-inflicted, it is believed, while despondent on account of ill health.

⊕ Indicates "Fellow" of the American Medical Association.

George H. Hoskins ✠ Whiting, Ind.; Northwestern University Medical School, 1898; aged 48; coroner of Lake County, and secretary of the board of education of Whiting; died in Wesley Hospital, Chicago, November 3, following gastroenterostomy for stenosis of the pylorus.

Robert C. James, Lexington, Ky.; University of the City of New York, 1893; aged 55; formerly instructor in obstetrics in his alma mater, attending surgeon to Lying-In Hospital from 1895 to 1905, and obstetrician to Emergency Hospital, New York; died, November 14.

Theodore Goodell Wright, New York; University of the City of New York, 1865; aged 86; a member of the Connecticut State Medical Society, and at one time vice president of the Hartford County Medical Society; a veteran of the Civil War; died, November 1.

Archibald Thomas Perkins, South Otselic, N. Y.; University of Buffalo, 1891; aged 53; a member of the Medical Society of the State of New York; Lieutenant, M. C., U. S. Army, and discharged, July 10, 1919; died, November 2, from cerebral hemorrhage.

Earl Roy Nutter, Joes, Colo.; Lincoln (Neb.) Medical College, Eclectic, 1909; aged 40; a member of the Colorado State Medical Society; died at St. Mary's Hospital, Kansas City, Mo., November 5, from cerebral hemorrhage.

Henderson Suter, Washington, D. C.; University of Pennsylvania, Philadelphia, 1877; aged 62; a member of the Medical Society of the District of Columbia; died, November 6, from cerebral hemorrhage.

Samuel Henry Braude, New Haven, Conn.; Yale Medical School, New Haven, 1913; aged 32; Lieutenant, M. C., U. S. Army, and discharged Dec. 2, 1918; died in Allington, Conn., November 6.

Abraham Skversky ✠ New York; University of Michigan, Ann Arbor, 1912; aged 32; Captain, M. C., U. S. Army, and discharged, Sept. 26, 1919; died, October 27, from accidental poisoning.

Franklin P. Blake, Yuma, Ariz., and Banning, Calif.; Kentucky School of Medicine, Louisville, 1876; aged 72; health officer of Banning; died suddenly, October 30, from heart disease.

Franz Gerzema, Peoria, Ill.; College of Physicians and Surgeons, Keokuk, Iowa, 1893; aged 58; a member of the Illinois State Medical Society; died, November 11, from heart disease.

Sarah Hall Sawyer, Los Angeles; Starling Medical College, Columbus, 1880; aged 69; health officer of Los Angeles from 1911 to 1915; died, November 7, from heart disease.

Eleanor W. Rosan, Chicago; State University of Iowa, College of Homeopathic Medicine, Iowa City, 1894; aged 71; died, November 13, from organic heart disease.

Robert Appleton Stevens, Long Beach, Calif.; College of Physicians and Surgeons, Keokuk, Iowa, 1879; aged 76; died, about November 8, from cerebral hemorrhage.

Richard Byrd Sherrill, Hartsells, Ala.; University of Alabama, Mobile, 1890; a member of the Medical Association of the State of Alabama; died about October 30.

James O'Hagan, Detroit; Michigan College of Medicine and Surgery, Detroit, 1897; aged 62; died suddenly, November 1, from heart disease.

A. G. McAlister, Cash, Ark. (license, Arkansas, 1904); aged 60; a member of the Arkansas Medical Society; died, September 7, from dysentery.

Levi Joseph Denchfield, New York; Medico-Chirurgical College of Philadelphia, 1899; aged 65; died, November 4, from heart disease.

Jessie Benton Brown Dodds, Escondido, Calif.; Northwestern University Woman's Medical School, 1887; aged 63; died, November 15.

W. E. Josephine Woods, Los Angeles; University of California, Berkeley and San Francisco, 1885; aged 64; died, October 15.

Kaknsaburo Kurozawa ✠ San Francisco (license, California, 1890); aged 56; died, November 8, from lobar pneumonia.

Herman Carl Jungblut ✠ Tripoli, Iowa; Bellevue Hospital Medical College, 1891; aged 58; died, November 3.

Richard Jentzsch, Chicago (license, Illinois, 1897); aged 57; died, November 19, from cerebral hemorrhage.

John L. Wright, Erie, Pa.; Jefferson Medical College, 1881; aged 64; died in Nashville, Tenn., November 4.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE FRAUD ON THE PUBLIC AND ON THE PROFESSION

CHLORLYPTUS

Report of the Council on Pharmacy and Chemistry

The condensed report on Chlorlyptus which follows and also a complete detailed report[1] was sent to the proprietor, Jan. 9, 1920. In reply he requested that publication be postponed pending the submission of further clinical evidence. As after nine months this evidence had not been received the Council has authorized publication of its report.

W. A. PUCKNER, Secretary.

Chlorlyptus is manufactured by Chas. A. Weeks, trading as the Weeks Chemical Company, Philadelphia. It is prepared by chlorinating eucalyptus oil until it has bound 30 per cent. of chlorin, the chlorin being in relatively stable combination. It is claimed that Chlorlyptus is a new "chlorinated antiseptic," highly efficient as a wound antiseptic and at the same time nonirritant and nontoxic. Chlorlyptus is offered for use in the treatment of local infections of all types, as well as of burns, and also as an antiseptic in the alimentary and genito-urinary tracts.

The claims were based largely on reports of investigations made by Phillip B. Hawk and his collaborators. These reports the referee of the committee in charge of Chlorlyptus considered incomplete and unconvincing. Being advised of this, Mr. Weeks caused further investigations to be made. Some of the information was checked and extended by the A. M. A. Chemical Laboratory and by the referee.

The laboratory side of the investigation may now be considered as complete. The results show that Chlorlyptus is a feeble antiseptic of the aromatic oil type, considerably weaker than eucalyptus oil, both as to the therapeutic and toxic qualities. The chlorin contained in it is bound too firmly to have any action; in fact, the chlorination appears to have accomplished nothing more than a considerable destruction or weakening of the eucalyptus oil. So far as the referee can judge, this object could have been accomplished just as effectively by diluting ordinary eucalyptus oil with some indifferent solvent.

The manufacturer of Chlorlyptus contends that if the experimental findings are against his product, it should be judged by the clinical data. The clinical evidence, however, is not decisive. It shows that wounds healed and infections were prevented or successfully combated in cases in which Chlorlyptus was used in combination with good surgery, but it does not show how much of the result was due to the surgery and how much, if any, to the use of Chlorlyptus. Even were it granted as probable that the Chlorlyptus contributed to the favorable outcome, it would still be a question whether it equals other established antiseptics, or whether it possesses any material advantages over diluted eucalyptus oil. Until these points are established the clinical reports cannot offset the unfavorable results of the laboratory investigation.

The manufacturer has endeavored to obtain more convincing clinical reports, but the lack of success in this direction during the past nine months gives little encouragement that acceptable clinical evidence will be available within a reasonable time.

Believing that the information which has been obtained should be made available to the profession, the Council authorized publication of this statement and also of the detailed report. The Council voted not to accept Chlorlyptus for New and Nonofficial Remedies because of the unfavorable results of the laboratory investigation, but with the agreement that the product would receive further consideration should more convincing clinical data become available.

1. A copy of the detailed report will be sent if a stamped addressed envelop accompanies the request.

Correspondence

BUBONIC PLAGUE SITUATION AT HOUSTON, TEXAS

To the Editor:—Many inquiries have been received regarding the bubonic plague situation at Houston, Texas, since Houston is located midway between the Texas ports that are reported to be infected, namely, Galveston and Beaumont.

When it became known that bubonic plague existed in the Mexican Gulf ports, extra precautions were instituted at Houston to protect it from plague-infected rodents. The Texas state law regarding the breasting off of ships and the installing of rat guards, the tarring of lines, etc., was carried out to the letter of the law. The Texas state law requires that a ship breast off 8 feet and that no gang planks be allowed to connect from the deck of the ship to the wharf at night except one, and that to be well lighted and under guard.

When it became known in June that plague had appeared at Galveston and Beaumont, a rat extermination and examination campaign was started by the health department of the city. After the meeting of the public health commissioners in Galveston in August, a more vigorous campaign was started by the health department of the city of Houston, and the Texas State Board of Health.

An expert bacteriologist, chief rat trappers, and an efficient personnel were employed. It was the consensus of the various public health and state health officers at the conference in Galveston that all cities of the Gulf Coast should render an index of rats examined to the extent of 10 per cent. of their population. The city of Houston has completed this index; 15,027 rats have been trapped, classified, dissected and examined to date with no appearance of bubonic plague among any of them.

CLASSIFICATION OF RATS EXAMINED

Male Norway	2,852
Female Norway	4,518
Male Rattus	189
Female Rattus	201
Male Alexandrian	1,779
Female Alexandrian	2,357
Male mice	548
Female mice	635
Wood rats	1,185
Cotton	16

Since completing this index, we have decided to continue our rat survey, although not keeping so great a force as we had during the campaign.

The city of Houston has also maintained a quarantine inspection at the mouth of the ship channel, where our own employees have personally inspected every boat that enters the Houston ship channel, regardless of size. Also, we have inspected every freight car that has come from an infected city. This was made possible by the cooperation of the freight agents of the seventeen different railroads with the health department, the health office receiving daily reports of all cars that had been in an infected city. While this procedure has at times worked a hardship on the inspectors, it has been well worth the effort.

We expect to continue this rigid inspection and examination as long as there is plague, either human or rodent, in the coast country.

Regarding the expense of our campaign, it has cost Houston about 70 cents per rat to date. This estimate, I believe, is lower than that experienced by other cities.

ARTHUR H. FLICKWIR, M.D., Houston, Texas.
Health Officer, City of Houston;
Assistant Collaborating Epidemiologist, U. S. P. H. S.

"INTELLECTUAL RECONCILIATION WITH GERMANY"

To the Editor:—In connection with the recent invitation of the group of Oxford professors and doctors to various German and Austrian scientists to resume friendly relations, and the rather characteristic Prussian reply, the following excerpts are illuminating. They are, so far as possible, literal translations from the preface of Schwalbe's 1920 edition of "Lectures on the History of Medicine" (Jena, G. Fischer, 1920):

> Between the second and third edition of this book has come the World War and the terrible misfortune of our Fatherland. The rupture of international thought has even included the domain of science. Nevertheless, science remains a possession which can never be limited to one people or from which a people can never be excluded, as is shown by history. A proof of this will also be conclusively shown in the following presentation.
>
> The war, which, after the so-called peace, our adversaries are still continuing in other forms, and which is directed against Germanism and the German language, has opened the eyes of many who formerly did not concern themselves with statecraft. It places thereby new duties on German scientists. Among these I reckon above all a care to purify our scientific language as far as possible from foreign expressions. From this point of view the present edition of my history of medicine has been carefully revised.
>
> May our university (Rostock), together with its sister institutions of the German Empire (to which German Austria is approaching in a community of speech and thought) by means of unceasing labor toward the improvement of instruction, while holding fast to the dear possessions of German freedom in learning and teaching, aid in the reconstruction of the beloved Fatherland and bring to a successful conclusion the spiritual struggle against deception and against slander of German work, when, after heroic deeds which have never before been equaled, the victory of arms was granted to our people. German spirit is unconquerable!
>
> Rostock, 12 Nov., 1919.

This, it seems, brings a new significance to the adage, Audi alteram partem.

EDWARD B. KRUMBHAAR, M.D., Philadelphia.

"THE PRECIPITIN TEST FOR GLOBULIN IN THE ARACHNOID FLUID IN GENERAL PARALYSIS"

To the Editor:—In THE JOURNAL, Nov. 13, 1920, p. 1332, Hektoen and Neymann maintain that the precipitin reaction may be of diagnostic value in the examination of the spinal fluid obtained from paretics. In an article entitled "Examination of the Cerebrospinal Fluid Particularly with Reference to the Precipitin Reaction" (*Interstate M. J.* **20**:38, 1913), I reached the conclusion that "the precipitin reaction is too delicate for clinical purposes. Its use is still limited to those instances in which we wish to prove that a given fluid or serum is of human origin." It is to be hoped that Dr. Hektoen's recent findings will lead to another method in assisting the clinician in establishing a diagnosis of paresis.

OSCAR BERGHAUSEN, B.A., M.D., Cincinnati.

IMPROVEMENT IN COMPLEMENT FIXATION TEST FOR SYPHILIS

To the Editor:—The adoption of this variation in technic, applicable to any method of performing the complement fixation test for the diagnosis of syphilis, will do away with the necessity of reporting serums as anticomplementary:

At the time of reading the results, one-half unit of complement is added to all tubes (test and serum control) of those tests in which the serum controls have not cleared and which would ordinarily be reported as anticomplementary. Incubation at 37 C. is continued for ten or fifteen minutes, and if the control tubes have not yet cleared, another half unit of complement is added. This process can be continued to the point of hemolysis in the control tubes in every case, with the result that a reading can always be made.

This procedure is part of the regular technic of a raw serum method described by me in a paper entitled "An

Attempt to Improve the Sensitiveness of the Complement Fixation Test for Syphilis Without Loss of Accuracy," read before the American Public Health Association meeting in September, but not yet published.

W. H. Kellogg, M.D., Berkeley, Calif.
Director, Bureau of Communicable Diseases and State Hygienic Laboratory, California State Board of Health.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

Alabama: Montgomery, Jan. 11. Sec., Dr. Samuel W. Welch, Montgomery.
Arizona: Phoenix, Jan. 4-5. Sec., Dr. Ancil Martin, 207 Goodrich Bldg., Phoenix.
Colorado: Denver, Jan. 4. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.
Delaware: Dover, Dec. 14-16. Sec., Reg. Bd., Dr. P. S. Downs, Dover.
District of Columbia: Washington, Jan. 11-13. Sec., Dr. Edgar P. Copeland, The Rockingham, Washington.
Florida: Gainsville, Dec. 6-7. Sec. Reg. Board, Dr. W. M. Rowlett, 812 Citizens Bank Bldg., Tampa.
Hawaii: Honolulu, Jan. 10-13. Sec., Dr. J. E. Strade, 1041 Alakea St., Honolulu.
Illinois: Chicago, Dec. 6-7. Director, Mr. Francis W. Shepardson, Capitol Bldg., Springfield.
Indiana: Indianapolis, Jan. 11. Sec., Dr. W. T. Gott, Crawfordsville.
Louisiana: New Orleans, Dec. 2-4. Sec., Dr. E. W. Mahler, 1551 Canal St., New Orleans.
Maryland: Baltimore, Dec. 14. Sec., J. McP. Scott, 137 W. Washington St., Hagerstown.
Minnesota: Minneapolis, Jan. 4-6. Sec., Dr. Thomas McDavitt, 539 Lowry Bldg., St. Paul.
New Mexico: Santa Fe, Jan. 10-11. Sec., Dr. R. E. McBride, Las Cruces.
North Dakota: Grand Forks, Jan. 4. Sec., Dr. George M. Williamson, Grand Forks.
Ohio: Columbus, Dec. 1-3. Sec., H. M. Platter, State House, Columbus.
Oklahoma: Oklahoma City, Jan. 11-12. Sec., J. M. Byrum, Shawnee.
Oregon: Portland, Jan. 4-6. Sec., Dr. Urling C. Coe, 1208 Stevens Bldg., Portland.
Pennsylvania: Philadelphia, Jan. 11-15. Sec., Dr. Thomas E. Finnegan, Harrisburg.
Rhode Island: Providence, Jan. 6-7. Sec., Byron U. Richards, Providence.
Virginia: Richmond, Dec. 14-17. Sec., J. W. Preston, 511 McBain Bldg., Roanoke.
Washington: Spokane, Jan. 4-6. Sec., Dr. William M. O'Shea, Spokane.
West Virginia: Charleston, Jan. 13. Sec., R. T. Davis, Charleston.

Michigan June Examination

Dr. Beverly D. Harison, secretary, Michigan State Board of Registration, reports the written examination held at Ann Arbor, June 8-10, and Detroit, June 21-23, 1920. The examinations covered 14 subjects and included 100 questions. An average of 75 per cent. was required to pass. At the Ann Arbor examination, 74 candidates were examined, all of whom passed; and at the Detroit examination, 72 candidates were examined, all of whom passed. The following colleges were represented:

ANN ARBOR EXAMINATION

College	PASSED	Year Grad.	Per Cent.
Johns Hopkins University Medical Department		(1920)	87.6
University of Michigan Homeopathic Medical School	83.7, 84.2, 85.1, 86.7, 87.3	(1920)	83.4,
University of Michigan Medical College	(1919) 85.4, (1920) 79.4, 79.8, 80.9, 80.9, 81, 81.1, 81.5, 81.6, 81.7, 81.7, 81.9, 82.3, 82.4, 82.4, 82.4, 82.9, 83, 83, 83.2, 83.2, 83.3, 83.3, 83.4, 83.5, 83.5, 83.8, 83.9, 83.9, 84.2, 84.2, 84.2, 84.2, 84.1, 84.3, 84.3, 84.4, 84.4, 84.5, 84.6, 84.6, 84.7, 84.7, 84.7, 84.8, 84.8, 84.8, 84.8, 84.9, 85, 85, 85.2, 85.4, 85.8, 85.9, 86.1, 86.4, 87.2, 87.5, 87.9, 88.3	(1918)	82.2,
Harvard University		(1920)	85.7
Eclectic Medical College, Cincinnati		(1920)	80.1
University of Tennessee College of Medicine		(1917)	84.4
University of Berne		(1917)	83.7
University of Rome		(1912)	75.2

DETROIT EXAMINATION

College	PASSED	Year Grad.	Per Cent.
Tulane University of Lousiana School of Medicine		(1916)	82.5
University of Illinois		(1920)	79.5
University of Michigan Medical College	(1920) 80.9, 81.1, 81.4, 83, 83.2, 83.3, 83.4, 83.5, 83.6, 84.3, 84.5, 85.4, 86.3, 87.1, 87.1, 87.6	(1919)	85.7,
University of Michigan Homeopathic Medical School		(1920)	84.2
Detroit College of Medicine and Surgery	81.3, 81.7, 81.7, 81.8, 81.9, 82, 82.1, 82.2, 82.3, 82.6, 82.8, 82.8, 83.2, 83.3, 83.3, 83.3, 83.4, 83.5, 83.7, 83.8, 84, 84.2, 84.2, 84.4, 84.4, 84.6, 84.7, 84.7, 84.8, 84.8, 85.7, 85.7, 86, 86.3, 87.1, 88.2	(1920)	80.2,
Washington University Medical School		(1919)	83.1
St. Louis University School of Medicine		(1917) 85.9, (1919)	84.2
Harvard University		(1920)	84.7
Eclectic Medical College, Cincinnati		(1920)	80.3
University of Pennsylvania School of Medicine		(1916)	87.5
Temple University Department of Medicine		(1920)	86.3
University of Edinburgh		(1911)	83.2
University of Toronto Faculty of Medicine	(1911) 75.8, 83.6, (1914) 85.7, (1916) 84.4, (1918) 81.8	(1905)	79.1,
Western University Faculty of Medicine		(1912)	80

Massachusetts July Examination

Dr. Walter P. Bowers, secretary, Massachusetts State Board of Registration in Medicine, reports the oral, written and practical examination held at Boston, July 14-16, 1920. The examination covered 13 subjects and included 70 questions. An average of 75 per cent. was required to pass. Of the 176 candidates examined, 144, including 3 osteopaths, passed and 32, including 10 osteopaths, failed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
University of California Medical School		(1920)	86.8
Loyola University	(1918) 83.5, (1919) 76, 83.5,	(1920)	76.8
Northwestern University Medical School		(1920)	84.2
College of Physicians and Surgeons, Chicago		(1912)	75
Bowdoin Medical School	(1919) 78.6,	(1920) 82.3,	83.7
Johns Hopkins University		(1903)	84
University of Maryland	(1915) 78.1,	(1920)	81.5
Harvard University	(1916) 85.7,	(1920) 75.2	75.7
	78.3, 78.9, 79.6, 80.2, 80.2, 81.2, 81.9, 82.2, 82.8, 82.8, 83, 83, 83, 83.4, 83.8, 84.2, 84.2, 84.6, 84.7, 84.7, 84.7, 84.8, 85.5, 85.6, 86.1, 86.2, 86.3, 86.4, 86.6, 86.7, 87.2, 87.8, 88.1.		
Boston University	(1920) 75, 78.3, 80.4, 82.5, 85.1,	82.5,	83
College of Physicians and Surgeons, Boston		(1917)	75.2
Tufts College Medical School	(1920) 75, 75, 75, 75.3, 75.4, 75.5, 75.7, 76, 76.1, 76.2, 76.3, 76.3, 76.5, 76.6, 76.7, 77, 77.1, 77.1, 77.2, 77.5, 77.5, 77.5, 77.8, 78.1, 78.1, 78.3, 78.4, 78.5, 78.7, 79, 79.1, 79.2, 79, 79.3, 79.4, 79.5, 79.8, 79.9, 80, 80.2, 80.3, 80.4, 80.5, 80.7, 80.9, 81, 81, 81.2, 81.2, 81.5, 81.6, 82, 82, 82.1, 82.2, 82.3, 82.4, 82.5, 82.8, 83.2, 83.4, 83.5, 83.7, 83.9, 84.		
Middlesex College of Medicine and Surgery	(1920) 75, 76.3, 78.8, 79.1, 83.5.	(1919)	78.4,
University of Michigan Medical School		(1920)	77.3
University and Bellevue Hosp. Med. College		(1920) 82.7,	84.3, 84.7
New York Homeopathic Med. Coll. and Flower Hosp.		(1920)	85.8
Columbia University		(1919)	80.8
Univ. of Pennsylvania School of Med.		(1916) 77.3, (1919)	80.7
Jefferson Medical College of Philadelphia		(1920)	77.9
University of Vermont College of Medicine		(1920) 76.2,	77.7
Laval University Faculty of Medicine		(1918)	81
Western University Medical School		(1913)*	79.7

College	FAILED	Year Grad.	Per Cent.
Tufts College Medical School	67.1, 70.2, 70.3, 72.6, 73.1, 74.1.	(1920) 64.9,	65.8,
College of Physicians and Surgeons, Boston	68.7, 72.8, 73.9.	(1920) 63.1,	65.2,
Middlesex College of Medicine and Surgery	(1919) 67.4, 70.7, (1920) 57.4, 69.9, 73.	(1917)	67.7,
Maryland Medical College, Baltimore		(1912)	69
Meharry Medical College		(1913)	68.9
Queen's University Faculty of Medicine		(1920)	73.2

* Graduation not verified.

South Carolina June Examination

Dr. A. Earle Boozer, secretary, South Carolina State Board of Medical Examiners, reports the written examination held at Columbia, June 22-24, 1920. The examination covered 17 subjects and included 100 questions. An average of 75 per cent. was required to pass. Of the 30 candidates examined, 25, including 1 chiropractor, passed, and 5 failed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
University of Georgia Medical Department		(1920)	75.6
Johns Hopkins University	(1917) 84.2,	(1920)	88.8
University of Maryland		(1918)	87.5
Bellevue Hospital Medical College		(1889)	85.5
Jefferson Medical College of Pennsylvania	(1915) 83.8, (1919) 84.	(1914)	84.7,
Medical College of the State of South Carolina	78.8, 80.2, 82.2, 83.2, 84, 85.5, 85.7, 87.3, 88.1, 88.5, 89.8, 89.8, 93.	(1920)	78.2,
University of Virginia		(1914)	94.5

College	FAILED	Year Grad.	Per Cent.
Atlanta Medical College		(1915)	74.3
Southern College of Medicine and Surgery		(1914)	70.1
College of Physicians and Surgeons, Keokuk		(1877)	71.2
Leonard Medical School		(1911)	69.7
University of Nashville		(1909)	75.6

Book Notices

X-RAY OBSERVATIONS FOR FOREIGN BODIES AND THEIR LOCALIZATION. By Captain Harold C. Gage, A.R.C., O.I.P., Consulting Radiographer to the American Red Cross Hospital of Paris. Cloth. Price, $1.75. Pp. 83, with 55 illustrations. St. Louis: C. V. Mosby Company, 1920.

This is largely a war product, being founded on war experience. The book covers several well known and some less well known localization methods, some of which were applied in the war zone with greater or lesser degrees of success. The presentation is concise and avoids the too oft excessive technical descriptions that carry one into the realm of higher mathematics, found in some publications. Its value, however, is more for war conditions than for civil practice, although several methods fall into the latter class. The author advocates the combined roentgen-ray and operative procedure for the removal of foreign bodies; this will receive the approval of many surgeons experienced in this particular form of foreign body localization and removal in the war zone. The Hirtz compass, which was so enthusiastically received by some of the American surgeons operating at the front, is given brief mention. From the text it seems evident that the author's understanding of this instrument falls short of a full appreciation of its real value as a localization apparatus and surgical guide for removal of the foreign body. If details of application were given, it is probable that it would serve to bring this method into greater use in civil roentgen-ray work and surgery. The profondometer method, which also received much notice during the war, appears under the title of "Cross Section Localization by Three Intersecting Lines." With the addition of anatomic chart tracings, this method is graphic and valuable in tissue orientation in the region of the foreign body. Such methods as these seem to be applicable to civil life hospital surgery. The author presents several of the less well known methods for bullet localization, each one of which will find supporters in accordance with their individual experiences. An old method of eye localization appears under a new name and apparently is credited as original to two French physicians. The author describes this technic at considerable length. The original description was published in January, 1899, in an English journal. The book closes with an interesting presentation on the value of direct roentgenograms on bromid paper, which may appeal to institutions where economy of roentgen-ray plates and materials enter into the roentgen-ray department management, though it is hardly probable that American hospitals will find it a necessary expedient.

VERGLEICHENDE ANATOMIE DES NERVENSYSTEMS. Erster Teil: Die Leitungsbahnen Im Nervensystem der Wirbellosen Tiere. Von Æ. B. Droogleever Fortuyn, Lector der Histologie, Reichs-Universität Leiden. Paper. Price, 12.50 Dutch guilders. Pp. 370, with 116 illustrations. Haarlem: de Erven F. Bohn, 1920.

It has long been recognized that the analysis of the intricacies of the internal structure of the human brain is greatly facilitated by study of the simpler schemata afforded by lower and more primitive types of nervous system. The literature of comparative neurology which can be drawn on for this purpose is voluminous; but it is widely scattered, and most of it is special and technical, and hence difficult of access by anatomists and physiologists in general. The utilization of this wealth of material will be greatly facilitated by the publication of the extensive work on the comparative anatomy of the nervous system, of which the book here reviewed is the first volume. The parts to follow, dealing with the nervous system of vertebrates, by Dr. Kappers of Amsterdam, are now in press. This volume, by Dr. Fortuyn of Leiden, makes no attempt to summarize all of the enormous literature on the nervous system of invertebrates, but reviews this field with the more restricted purpose of assembling what is known regarding the conduction pathways of these various and diversified forms. This survey is comprehensive and thorough and, since a description of the conduction pathways includes what is of greatest significance for both comparative anatomy and comparative physiology, the work comprises in condensed and accessible form a judicious selection of the most valuable data gleaned from an enormous mass of widely scattered publications on the nervous systems of all groups of invertebrate animals, including *Amphioxus*. It contains good bibliographies, and as a reference book will be of great service.

GRUNDRISS DER AUGENHEILKUNDE FÜR STUDIERENDE UND PRAKTISCHE AERZTE. By Prof. Dr. A. Brückner, Oberarzt, und Prof. Dr. W. Meisner, I. Assistent. der Universitäts-Augenklinik zu Berlin. Paper. Price, $2.43. Pp. 649, with 126 illustrations. Leipzig: George Thieme, 1920.

Germany has always been able to produce an abundant supply of comprehensive textbooks on ophthalmology. The authors of this volume began its compilation about eight years ago, but it was interrupted by the war. After its completion it was necessary, because of the changed economic conditions of the country, to sacrifice all nonessentials in the make-up of the book, in order to keep the price within the means of students. The text of the book is divided into four parts. As is to be expected in a German treatise, the most exhaustive single section is given to special pathology; the subject of the relationship between eye diseases and general systemic conditions likewise receives commendable attention. In the other three parts, the general subjects of anatomy, physiology, bacteriology, serology, functional testing, prophylaxis, and surgical and therapeutic treatment are much more briefly considered. In the make-up of the book itself, its excellent typography offsets, perhaps, some of its defects; but in its paper cover and insecure binding, and with a complete absence of colored plates to illustrate the various pathologic fundus conditions, which are so prominent a feature in several of the most recently published ophthalmic textbooks, this work probably will not appear especially attractive to students.

THE NERVOUS HOUSEWIFE. By Abraham Myerson, M.D. Cloth. Price, $2.25 net. Pp. 273. Boston: Little, Brown and Company, 1920.

Dr. Myerson tells in plain language what he has learned in his practice and by observation relative to the causes of nervousness in the modern housewife. As Oliver Wendell Holmes said in his "Autocrat of the Breakfast Table":

> Talk about military duty! What is that to the warfare of a married maid of all work, with the title of mistress, and an American female constitution which collapses just in the middle third of life, and comes out vulcanized India rubber, if it happens to live through the period when health and strength are most wanted.

The author shows that the nervous housewife has existed in America, not only since the time of Oliver Wendell Holmes but since the earliest days. He analyzes the causes for differences between husband and wife from both the mental and the physical points of view. He shows that the reaction to disagreeable and unexpected situations is the primary cause of conflict. In two chapters he cites typical cases of maladjustment, and in his final chapters considers treatment and the future of women in this country. Of course, he realizes the importance of prophylaxis, viz., that marriage should be guarded so that the grossly unfit do not marry. The book was written that the nervous housewife might know herself better. No doubt, nervous housewives would be benefited if they would read more of any thing and do less of some things. Certainly they will be benefited by reading such a sympathetic account of their trials and tribulations as Dr. Myerson has prepared.

A STUDY IN THE EPIDEMIOLOGY OF TUBERCULOSIS, WITH ESPECIAL REFERENCE TO TUBERCULOSIS OF THE TROPICS AND OF THE NEGRO RACE. By George E. Bushnell, Ph.D., M.D. Cloth. Price, $2.75. Pp. 221. New York: William Wood and Company, 1920.

The writer has collected a number of interesting facts and opinions regarding the distribution and racial relations of tuberculous infection. The incompleteness of our knowledge about tuberculosis in many tropical countries is emphasized by the data presented. The tuberculosis of the American negro and of the American Indian is also considered. Many suggestive facts are recorded; but the total outcome of the inquiry is inconclusive and the book must be regarded, as the writer evidently wishes it to be, as a collection of suggestions and implications, rather than a finished treatise arriving at definite conclusions.

Medicolegal

Cause of Hodgkin's Disease Not Considered Proved

(State ex rel. Johnson Hardware Co. et al. v. District Court of Carver County et al. (Minn.), 177 N. W. R. 644)

The Supreme Court of Minnesota reverses a judgment that was rendered, under the workmen's compensation law, in favor of the widow of a man who died of what was diagnosed as Hodgkin's disease. The court says that the man had followed the occupation of a tinner and plumber for more than twenty years and was employed in that capacity by the relator hardware company at the time he became ill. The trial court found that the disease which caused his death, known as Hodgkin's disease, resulted from ulcerations of the mucous membrane of his nose, and that these ulcerations were caused by inhaling the fumes of hydrochloric acid used by him while engaged in the performance of his duties as a tinner. These findings rested on the testimony of a physician who, in an examination of the man about four months before his death, found two ulcerated spots on the septum of the nose, one of which had already healed. The physician testified that, in his opinion, the ulcerations which he found were caused by inhaling the fumes of hydrochloric acid used in certain soldering operations, and that the Hodgkin's disease resulted from these ulcerations. But the physician's statement that in his opinion the man became afflicted with Hodgkin's disease because of the ulcerations of the mucous membrane of his nose, when taken in connection with the physician's further statement that he did not know how that disease originates nor what causes it, could be considered only as a mere guess. It was undisputed that medical science has not yet discovered how this disease is produced or what causes it, and no attempt was made to show that it follows traumatic injuries or that such injuries have any part in producing it. If the evidence had disclosed any facts from which a reasonable mind could legitimately infer a causal connection between the inhaling of the acid fumes and the disease which caused death, the finding of the trial court would be final. But the supreme court is forced to the conclusion that the evidence disclosed no basis of fact for the findings in question; that they rested wholly on conjecture, and, therefore, could not be sustained.

When Fees Are Subject to Approval of Industrial Board

(National Car Coupler Co. et al. v. Sullivan (Ind.), 126 N. E. R. 494)

The Appellate Court of Indiana, Division No. 1, holds that the industrial board was without jurisdiction to make an order that the claim of plaintiff Sullivan, a physician, be approved for $341 for treating injured employees of the defendant company, he having been employed by the defendants to treat the injuries of certain of the company's employees, arising by accidents out of and in the course of their employment with the company. The court says that Section 25 of the workmen's compensation act of Indiana, of 1915, which was in force when the services in question were rendered, provides that:

> During the thirty days after an injury the employer shall furnish or cause to be furnished free of charge to the injured employee . . . an attending physician . . . and in addition such surgical and hospital service and supplies as may be deemed necessary by said attending physician or the industrial board. . . . If in an emergency on account of the employer's failure to provide the medical care for the first thirty days, as herein specified, or for other good reason, a physician other than that provided by the employer is called to treat the injured employee during the first thirty days, the reasonable cost of such service shall be paid by the employer subject to the approval of the industrial board.

By the plain language of this section it is apparent that it was the intention of the legislature that only the fees of physicians called to treat injured employees in the emergency stated should be subject to the approval of the industrial board. But Section 65 provides that "fees of attorneys and physicians and charges of hospitals for services under this act shall be subject to the approval of the board." Was it the intention of the legislature, by the enactment of Section 65, to destroy the distinction made in the fees of physicians by Section 25, and to make all of such fees subject to the approval of the industrial board? The court thinks that it was not.

An employer, generally speaking, may become liable for the fees of a physician in one of two ways: (1) by contract, either express or implied, made with the physician; (2) by a physician treating an injured employee, when called to do so under an emergency, caused by the employer's failure to provide medical care, or for other good reason. In the way first named, the employer voluntarily assumes the liability incurred, and has an opportunity to protect himself against excessive charges by contract, and even to obtain such services at less than the prevailing charges, by special arrangements. But, in the way last named, liability, instead of being voluntarily assumed by the employer, is imposed on him by statute, under circumstances in which usually he would have no opportunity to protect himself against excessive charges. In view of this fact, and the well-recognized custom, among at least a portion of the medical profession, to base their charges for services in part on the ability of the one liable therefor to pay, the legislature evidently intended to make the fees of physicians, where services were rendered in the way last named, subject to the approval of the industrial board as provided in Section 25. In view of the rule which favors that construction of a statute which does not abridge the right to contract, and the absence of any harmful practice, at the time of the enactment of the workmen's compensation act, respecting charges for medical services, the court is led to believe that the legislature did not intend by Section 65 to enlarge the authority of the industrial board with reference to the approval of the fees of physicians beyond that provided in Section 25, since no good reason appears for believing that harmful practices would arise in that regard under such act, where the right to contract was left open to the employer.

Society Proceedings

COMING MEETINGS

American Physiological Society, Chicago, Dec. 30.
District of Columbia, Medical Society of, Washington, Dec. 1.
Porto Rico, Medical Association of, Ponce, Dec. 13-14.
Radiological Society of North America, Chicago, Dec. 16-17.
Society of American Bacteriologists, Chicago, Dec. 28-30.
Southern Medical Association, Louisville, Ky., Nov. 15-18.
Southern Minnesota Medical Association, Mankato, Nov. 29-30.
Southern Surgical Association, Hot Springs, Va., Dec. 14-16.
Western Surgical Association, Los Angeles, Calif., Dec. 3-4.

MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA

Seventieth Annual Session, held at Harrisburg, Oct. 4-7, 1920

(Concluded from page 1448)

SECTION ON SURGERY

Problems of Modern Chest Surgery as Met by Physiologic Drainage

DR. LEVER F. STEWART, Clearfield: In lung surgery, when infection is present, the pleural cavity should be kept drained and free from air. This is made possible by the use of the one-way valve used in the army box gas mask. It meets the physiologic requirements. This was first suggested to me by Yates, in 1918. I have attached this valve to the Brewer tube, modified its application so as to continue indefinitely the protection of the pleura from the air, and at the same time permit the use of surgical solution of chlorinated soda. To the distal end of the tube the gas mask is attached. The outer flange of the tube is placed under the skin, which is sutured over it with catgut.

DISCUSSION

DR. FREDERICK B. UTLEY, Pittsburgh: It is of more importance to determine whether the patient can take an anesthetic from the standpoint of the respiratory tract than to take the

measure of the circulatory system. It would seem wise to have all patients in the hospital a few days before operation. I have seen two or three cases this spring in which Dr. Stewart's method was used, and it was amazing to see how completely the pleural cavity had filled with the expanding lung.

DR. A. RALSTON WELLS, Philadelphia: All inhalation anesthesia makes the lung work to a fuller extent. It causes a passive hyperemia of that lung and gives a better opportunity for culture of any bacterium that happens to be present. Nitrous oxid is the least harmful of all the anesthetics administered by inhalation. Spinal anesthesia is moderately safe. Given by a person who is familiar with its use, it overcomes many of the difficulties experienced in chest surgery. The drainage tube of Dr. Stewart is very apt and will lessen our mortality to a great extent.

Postoperative Complications and Sequels of the Respiratory Tract

DR. H. RYERSON DECKER, Pittsburgh: On the average, one person in every forty-five operated on develops a respiratory tract complication, and one person in every 200 dies from such a complication. Pneumonia, chiefly the croupous type, is by far the commonest complication. In our series of 5,976 cases there were ten cases of pleurisy, seven cases of bronchitis, and two cases of embolism of the pulmonary artery. Latent tuberculosis may be lighted up, or an active lesion may be aggravated by operation, especially if inhalation anesthesia is used. Exposure of the patient before and after operation to unaccustomed conditions is an important predisposing cause of respiratory trouble, likewise various infections preexisting in the body.

Carcinoma of Breast

DR. WALTER E. SISTRUNK, Rochester, Minn.: In 218 consecutive cases in which primary radical amputation of cancer of the breast had been performed from five to eight years previously, the recurrences occurred largely in late cases, and evidently came because cancerous tissue was left in regions inaccessible to the knife, while the highest percentage of cures and the infrequent recurrence were found in those patients operated on early, before glandular involvement could be demonstrated. The end-results are probably better than those in any other type of cancer, except the basel cell epitheliomas of the skin and cancers of the lip. When the public is better educated as to the necessity of seeking surgical aid early for all breast tumors, and when it is generally recognized by the entire medical and surgical profession that the day of watching breast tumors is past, it seems likely that the formation of many cases of malignancy will be prevented and that 75 to 80 per cent. of patients with cancer will obtain from five to eight year cures.

DISCUSSION

DR. MOSES BEHREND, Philadelphia: In order to get results it is absolutely essential to clear out all diseased tissue, especially the glands.

DR. DONALD GUTHRIE, Sayre: If you will recall Dr. Sistrunk's statistics and see the great difference between the number of patients who remained well without axillary involvement as compared to the number who had recurrence following axillary involvement, it all means that the tumors must reach the surgeon earlier. Following the suggestions of Dr. Wainwright of Scranton, I have for the last few years been irradiating the field of operation before closing the skin. Roentgenologists believe that much of the ray is filtered out by the skin, and that a valuable way to attack cancer cells is at the time of operation before the skin flaps are closed.

DR. WALTER E. SISTRUNK, Rochester, Minn.: As to the preliminary treatment of these patients with the roentgen ray, I think that is good treatment. It would be a good plan to treat these patients with heavy doses of radium or roentgen ray before as well as after operation.

Treatment of Complicated Cleft Palate

DR. JOHN B. ROBERTS, Philadelphia: Delay in starting the operative treatment of congenital clefts of the oronasal partition beyond the first month or two of life is usually an error of judgment. If the child's condition does not permit completion of the operation, the harelip can be given attention about two weeks after the osteoplastic work has been done. The wire in the maxilla should not be disturbed for four or five months. In bilateral clefts the protruding intermaxilla is forced back into place, but it should never be removed. Two or more operations may be needed entirely to close the defect. No routine method of uranoplasty or staphyloplasty can be used successfully. Any residual defects may be corrected in the second or third year.

Bone Necrosis, with Special Reference to Tuberculous Lesions

DR. MARVIN W. REED, Bellefonte: Tuberculosis of the bone begins usually as an infection of the epiphysis and, while it may burrow through the cortex and periosteum and discharge as an abscess, the usual process is to extend into the joint. Early symptoms may be very indefinite. The treatment is hygienic, with active surgical intervention in suitable cases.

DISCUSSION

DR. ALEXANDER ARMSTRONG, White Haven: The infrequency of bone and joint conditions in tuberculous cases is notable. Among 300 cases of pulmonary tuberculosis are only five cases of bone or joint tuberculosis. With free pus, the sun bath with roentgen rays and violet rays will give astonishing results.

Diagnosis and Treatment of Carcinoma of Rectum

DR. DAMON B. PFEIFFER, Philadelphia: Carcinoma of the rectum is a common disease, ranging next in frequency to carcinoma of the stomach. The mortality of cancer of the rectum unoperated on is the same as that of cancer of the stomach, namely, 100 per cent. Yet strenuous efforts are made to diagnose and operate on cancer of the stomach, while general apathy exists concerning the disease in the rectum, in spite of the fact that chances of cure in the latter are better. Diagnosis is easy, but can be made only by examination. The index finger is the only instrument needed. Fully 90 per cent. of rectal cancers are readily palpable with the finger, and those higher up can be diagnosed by signs of obstruction. Operation is the only treatment.

DISCUSSION

DR. J. ELMER PORTER, Pottstown: An examination of the rectum with the gloved finger or speculum, or both, should be made of every patient coming with symptoms of rectal disease. The exploratory median abdominal incision, which permits an examination of the rectum and adjacent organs, also the liver for secondary involvement, is valuable.

Repair and Anastomosis of Bile Passages for Relief of Chronic Jaundice

DR. MOSES BEHREND, Philadelphia: Injury to the common duct can be prevented if during operation the structures within the gastrohepatic omentum are exposed to the eye. A careful operation shows that there are 25 per cent. of variations in the relation of the ducts to each other and to the blood vessels. When the common duct has been destroyed, the best procedure is the anastomosis of the hepatic duct to the duodenum or stomach. When jaundice is due to tumors of the pancreas or an irremovable tumor at the papilla of Vater, great relief can be given the patient by the anastomosis of the gallbladder or common duct to the stomach or duodenum. Every patient with chronic jaundice should be operated on as quickly as possible.

DISCUSSION

DR. JOHN J. GILBRIDE, Philadelphia: We should retain as far as possible the physiologic function and not anastomose the gallbladder to the stomach, except under extreme urgent necessity when one cannot anastomose the parts to the duodenum. Better results will be obtained by anastomosis of the gallbladder or duct directly into the duodenum. That is where the bile belongs and where it performs its function.

DR. MOSES BEHREND, Philadelphia: Sometimes mechanical difficulties are so great that it is safer to anastomose the

gallbladder to the stomach instead of to the duodenum. It is remarkable how the stomach will tolerate bile. In several of my cases, no vomiting occurred after operation.

Practical Aspects of Antenatal Hygiene

DR. EDWARD A. SCHUMANN, Philadelphia: Antenatal hygiene is divisible into three groups: (*a*) the sociological factors, housing, sanitation, food and occupation as applied to the pregnant woman, or, better, to the woman in whom pregnancy is a possibility; (*b*) eugenics and the care of the woman and her fetus from the standpoint of prevention of infection, recognition and treatment of disease, if present, and those prophylactic measures against toxemia which are so generally understood (*c*) the prevention of birth traumatism by careful estimation of the capacity of the maternal passages, the relative size of the pelvis and fetus, and the conduct of labor in such fashion as to secure the best possible results for mother and child. Maternal fever above 104 F. is highly dangerous to fetal life, so special care should be taken in febrile diseases to keep the temperature below this point. The pregnant woman should be seen and carefully examined by her physician early in pregnancy.

SECTION ON MEDICINE

Errors and Oversight in Use of Blood Pressure Apparatus

DR. GEORGE E. HEIN, Pittsburgh: Factors not necessarily due to pathologic changes in the anatomy of the cardiovascular system, but producing changes in the arterial tension, are often not sufficiently taken into consideration. Variations in pressure produced by mental reactions or emotion are especially liable to lead to the wrong impression. A vicious circle may be set up in a neurotic patient by the knowledge of changes in his or her arterial tension. A wider limit for normal is necessary for the interpretation of both systolic and diastolic pressure than is generally accepted. Each individual sets his own standard.

Treatment of Hyperthyroidism

DR. FREDERICK B. UTLEY, Pittsburgh: The normal function of the thyroid is believed to be its control over cell growth, calcium metabolism, catabolism, and antitoxic and immune bodies. The continued response of the thyroid to abnormal stimulation finally results in hyperthyroidism with its various symptoms. An early recognition of any abnormality of the function of the thyroid is essential, and all possible etiologic factors should be eliminated as promptly as the patient's condition permits. Surgical procedures should be directed toward the etiologic factors and not the gland proper, except in those cases in which it is expedient to spare the patient at once from the drive of the overactive thyroid when the removal of foci should follow the surgery on the gland. Further treatment consists of rest in bed with suitable surroundings and diet, and the administration, when indicated, of neutral quinin hydrobromid, calcium chlorid, sodium phosphate, intestinal antiseptics and syrup of ferrous iodid in small, properly guarded doses.

DISCUSSION

DR. LAWRENCE LITCHFIELD, Pittsburgh: If the usual treatment by suprarenal therapy and roentgen rays fails to give satisfactory results, we must advocate removal of part of the gland. In hypothyroidism we must feed thyroid gland or its derivatives. Roentgen-ray treatment should be well tried before submitting to the surgeon. It has been demonstrated that simple goiter in schoolchildren can be prevented and removed by the moderate use of the iodids.

Method of Distinguishing Those Micro-Organisms That Are and Those That Are Not Acted On by the Patient's Whole Blood

DRS. MYER SOLIS-COHEN and GEORGE D. HEIST, Philadelphia: When several micro-organisms are present in a culture, if they be incubated in the whole blood of that patient, some will disappear while others will grow luxuriantly. Evidence points to the existence in such a patient of a high degree of immunity to those organisms that disappear from his blood, and of susceptibility to those organisms that grow in it. These phenomena have been utilized in preparing autogenous vaccines that contain only those organisms that grow in the patient's blood and do not contain those organisms which the patient's blood already has the power of destroying or inhibiting.

Effect of Influenza Epidemic on Tuberculosis

DR. CHARLES H. MARCY, Pittsburgh: Among 533 patients known to have had tuberculosis prior to the onset of influenza, old quiescent lesions were reactivated in the majority of cases. In 34.3 per cent. of the series, the onset of tuberculosis dated from the influenza.

End-Results of Sanatorium Treatment for Tuberculosis

DR. H. R. M. LANDIS, Philadelphia: If the tuberculosis sanatoriums were confined in their efforts to those for which they were originally intended, that is, the care of early cases, the number of individuals progressing into the advanced stages of tuberculosis would be rapidly diminished and in this way the infection of others would be reduced correspondingly. As it is now, the sanatoriums contain chiefly advanced cases which are likely to relapse after leaving the institution. This leads many to conclude that sanatorium treatment is not very effective. If I were to single out the one great advantage which the sanatorium offers, I would unhesitatingly say "rest." The greatest disappointment from sanatorium treatment is the tendency of those so treated to relapse; but it must be borne in mind that one of the chief characteristics of tuberculosis is to relapse. Given the type of case which offers a chance of being improved, I think it can be said safely that the well conducted sanatorium does all that has been claimed for it.

Gastric Disease and Relation to the Glands of Internal Secretion

DR. TRUMAN G. SCHNABEL, Philadelphia: With dysfunction of the ductless glands there is sometimes found dysfunction and a pathologic condition in the stomach. The relationship of the ductless glands to the stomach has some evidence in its favor. Perhaps the internal secretions influence the stomach directly. Organotherapy should be tried in gastric disease, especially of the functional type; it may be successful in a small number of cases.

Diagnosis of Functional Capacity of Kidneys in Various Types and Stages of Nephritis

DR. ROY R. SNOWDEN, Pittsburgh: Urinary findings in nephritis are no indication of functional capacity of the kidneys. Large amounts of albumin, casts and even blood may be present, and yet the kidneys may be excreting all waste products normally. On the other hand, cases in which there is serious retention may show only a trace of albumin and a few casts. One must never judge the functional capacity of kidneys on evidences found in the urine alone. Diagnosis of the ability of the kidneys must rest on (*a*) clinical symptoms and (*b*) functional tests. Functional tests are the best indexes of excretory ability, as they reveal early changes which precede the development of clinical symptoms. Clinical symptoms are also of importance, especially since their significance is now well understood in the light of modern chemical metabolic knowledge.

Apoplexy

DR. CHARLES S. POTTS, Philadelphia: Many physicians believe that the lesion of cerebral apoplexy is always hemorrhage. This is not the case. By apoplexy we mean the occurrence of sudden paralysis, sometimes accompanied by unconsciousness, due to a lesion of the vascular system. This may be hemorrhage, the blocking of a vessel by a thrombus or an embolus, or closure due to spasm or to lacunar degeneration. Thrombosis or embolism is more common than hemorrhage. Sometimes it is impossible to determine the nature of the lesion. The fact that apoplexy is not infrequent in early life does not seem to be generally recognized. It is more frequent during the first decade of life than any other except the fifth. Syphilis is a frequent cause in young adults. Hemiplegia is not always present in apoplexy, as regions of the brain other than the motor may be involved.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

November, 1920, No. 5

*Polyneuritic Syndrome Resembling Pellagra-Acrodynia (?) Seen in Very Young Children. A. H. Byfield, Iowa City.—p. 347.
*Study of Blood and Its Circulation in Normal Infants and in Infants Suffering from Chronic Nutritional Disturbances. K. Utheim, Christiania, Norway.—p. 366.
*Amyotonia Congenita. N. O. Pearce, Minneapolis.—p. 393.
*Amyotonia Congenita (Oppenheim). Report of Case with Full Histopathologic Examination. J. B. Holmes, Baltimore.—p. 405.
*Lesions in Midbrain; Report of Case. J. H. M. Knox, Jr., Baltimore. —p. 436.
*Concerning Direct Smears in Diphtheria. A. Bleyer, St. Louis.—p. 445.

Pellagra-Acrodynia; Polyneuritic Syndrome.—Seventeen patients, all under 4 years of age (five of them being less than 1 year old), who have been seen by Byfield, manifested a group of signs and symptoms out of the ordinary. The resemblance of their malady to pellagra was striking, but so many points spoke against such a diagnosis, that it was necessary to think of the presence of some other disease. The disease picture was a complex one, the nervous system and the skin being most involved, while the respiratory tract and the digestive tract appeared to be less affected. According to the anamneses, infection rather than dietary error seems to play the more important rôle as an exciting factor. A postmortem examination in one case (complicated with tuberculosis) showed involvement of an occasional anterior horn cell of the spinal cord, gliosis about the central canal and edema of the sensory roots. It is suggested that the disease is a postinfluenzal radiculitis or sensory polyneuritis.

Blood and Circulation in Well and Sick Infants.—It was found by Utheim that the serum protein in normal infants is from 6 to 6.5 per cent. and remains at this level until the tenth or eleventh month, when the protein begins to rise, and by the fifteenth month it has reached the same level as found in adults, that is, about 8 per cent. Infants suffering from various diseases show, with the exception of exudative diathesis and nephritis, no remarkable change in blood protein concentration, while infants with acute diarrhea or vomiting have a high per cent. of protein, the result of blood concentration. Premature infants and athreptic infants show a low protein percentage in blood, in many cases as low as 4 per cent. In some cases this seems to be due to lack of power on the part of the organism to build up protein, in other instances to the overfeeding with carbohydrates. The high water content of the organism in both premature and athreptic infants is an important factor in the low immunity they show, thus predisposing these infants to multiple infections. Athreptic infants also show a very low rate of blood flow which in some instances is due partly to the diminished blood volume, in other instances to constriction of the peripheral small vessels in order to accomplish the distribution of the blood to the internal organs. The low blood flow is not usually accompanied by a lowering of blood pressure. Experiments on rabbits have shown that during complete starvation with deprivation of fluid, the blood volume falls below the normal value for the body surface as a result of water loss from the blood. However, by giving only enough food and water to prevent further weight loss, the blood volume is rapidly restored and quickly reaches a value above normal for the body surface.

Amyotonia Congenita.—Of the five cases reported by Pearce, one is of interest largely because of the classical symptomatology and the results of the exhaustive metabolism study carried out. The second and third cases and the fourth and fifth cases are believed to be the first authentic instances reported of twins suffering from the disease. Literature reveals only one other instances in which twins have been mentioned; one twin died intrapartum.

Amyotonia Congenita.—The case described by Holmes conforms in all essential details to the condition known as amyotonia congenita (Oppenheim). The disease was present at birth. There was no lasting amelioration, and the child died of the usual pulmonary complications at the age of 18 weeks. The significant lesions were found in the spinal cord and in the muscles. The spinal cord was relatively large for the age of the child; the anterior roots were diminished in size as compared with the posterior roots. There was no disturbance of the contour of the cord in cross section. Microscopic examination showed complete absence of any acute, or chronic, inflammatory process, and no evidence of recent degeneration. Myelinization was normal. Cells of Clarke's column were of normal size and well preserved. The histopathologic findings are best explained on the assumption of a delayed or retarded embryologic development affecting certain motor cells of the anterior horns and certain groups of developing muscle cells (fibers). No anomaly of the peripheral nerves, muscle spindles, or blood vessels is recognized.

Tubercle of Midbrain.—Knox's patient was a colored boy, 3 years of age, who manifested general weakness and trembling and drooping of the eyelids. Roentgenoscopy of the head showed a moderate internal hydrocephalus and a probable tumor above the sella turcica. At the necropsy dissection of the brain stem disclosed a large tubercle the size of a hickory nut which took the place of the upper surface of the midbrain. The anatomic diagnosis was solitary tubercle of the midbrain and right parietal lobe; tuberculous meningitis.

Direct Smears in Diphtheria.—Bleyer emphasizes that a bacteriologic diagnosis of diphtheria can be made by direct smear as well as by culture. Contrary to widespread belief this is available to the clinician not possessed of any unusual skill or training in this sort of work and affords a simple and very exact aid to the diagnosis of diphtheria. In the series reported this occurred in one in about five or six cases. Bleyer suggests that probably the unpopularity of direct smears in diphtheria is due to expecting too much of them rather than because of any difficulty inherent to the method.

American Journal of Ophthalmology, Chicago

November, 1920, **3**, No. 11

Rupture of Cornea by Contrecoup from Bullet Wound of Orbit. H. Gifford, Omaha.—p. 787.
Two Cases of Kroenlein Operation. V. P. Blair, St. Louis.—p. 789.
Physiology of Accommodation in Eye of Bird. J. R. Slonaker, Stanford, Calif.—p. 798.
Function of Protein in Lacrimal Secretion. C. F. Charlton, Pasadena, Calif.—p. 802.
Blows on Eyeball in Region of Ciliary Processes: Their Medicolegal Aspect. G. H. Burnham, Toronto.—p. 805.
Case of Retinal Glioma Treated with Radium. S. B. Chase, Fort Dodge, Iowa.—p. 806.
Apparatus for Testing Light and Color Sense. C. E. Ferree and G. Rand, Bryn Mawr, Pa.—p. 812.
Spontaneous Luxation of Eyeball. T. E. Oertel, Augusta, Ga.—p. 814.
Case of Chronic Glaucoma, with Results Following Operation. C. C. Rush, Johnstown, Pa.—p. 816.
Pigmented Hairy Mole Involving Cornea. O. Wolfe and F. L. Wahrer, Marshalltown, Iowa.—p. 818.
Case of Peripheral Communicating Vessels Between Retina and Choroid. H. S. Gradle, Chicago.—p. 818.
Marked Clearing of Vision in Unoperated Eye Following Operation for Cataract. E. N. Robertson, Concordia, Kan.—p. 820.

American Review of Tuberculosis, Baltimore

October, 1920, **4**, No. 8

*Studies on Immunity to Tuberculosis. A. K. Krause and D. Peters, Baltimore—p. 551.
*Results of Virulent Reinfection into Tuberculin Reacting Areas (Skin) of Tuberculous Guinea-Pigs. A. K. Krause and H. S. Willis, Baltimore.—p. 563.
*Effect of Artificial Pneumothorax on Pulmonary Tuberculosis in Rabbit. H. J. Corper, S. Simon and O. B. Rensch, Denver.—p. 592.
*Hypernephrectomy and Experimental Tuberculosis. G. B. Webb, G. B. Gilbert, J. B. Hartwell and C. T. Ryder, Colorado Springs.—p. 605.
*Epinephrin Hypersensitiveness in Definite and Unproved Pulmonary Tuberculosis. F. H. Heise and L. Brown, Trudeau, N. Y.—p. 609.
*Study of Goetsch Test. R. McBrayer, Sanatorium, N. C.—p. 616.
*Pulmonary Findings Due to Circulatory Changes. J. S. Pritchard and M. A. Mortensen, Battle Creek, Mich.—p. 620.

Immunity in Tuberculosis.—A description of graphic records of the local allergic and immune reactions to tuberculous reinfection in guinea-pigs is given by Krause and Peters. The essence of the Koch phenomenon is a rapid ulceration followed by a slough and healing wound at the point of reinoculation of tubercle bacilli. Inasmuch as animals in which the phenomenon occurred were observed to

contract relatively little or no tuberculosis in consequence of their reinoculation, it was supposed that the phenomenon was a manifestation of immunity. This conception the authors hold is undoubtedly correct.

Virulent Reinfection in Tuberculosis.—The problem discussed by Krause and Willis is (1) how to get a skin inflammation that would resemble as closely as possible an intracutaneous reaction, and (2) once this was obtained, how it would influence infection performed directly into it. The results of their observations are given in many lengthy tables.

Effect of Artificial Pneumothorax on Pulmonary Tuberculosis.—Corper and his associates found that one-sided artificial pneumothorax or compression of one of the lungs of the rabbit by means of fluid, artificial hydrothorax, has no visible macroscopic influence on the number or type of the tuberculous lesions resulting from the intravenous injection of virulent human tubercle bacilli, regardless of whether the compression is occasioned on the right or on the left side, or whether it is occasioned a day before or a day after the intravenous injection of tubercle bacilli. These results disagree with those found by Shaw who maintains that compression favors the development of the tuberculosis in the compressed as compared to the other lung. No differences between the number or type of the tuberculous lesions were noted in animals with one lung compressed as compared with normal animals, not compressed, although the differences between the different animals of the same series receiving the same intravenous injections of tubercle bacilli was greater than the differences found between the two lungs of the same animal. Suspensions of Prussian blue, scarlet R and starch, injected intravenously into rabbits shortly (within one-half hour) after a right-sided closed pneumothorax, were found uniformly distributed throughout the lungs immediately after injection and up to two hours thereafter. The gradual disappearance of Prussian blue within that time occurred uniformly on both sides and would not tend to support Bruns, who mainained that the circulation was lessened in the compressed lung as opposed to Cloetta who maintained an equal (or even better circulation) in the pneumothorax lung as compared with the other lung.

Relation Between Suprarenal Function and Tuberculosis.—The relation between suprarenal function and tuberculosis was investigated by Webb and others. Removal of one suprarenal gland apparently did not make any difference in resistance to tuberculosis, though the primary palpable enlargement of inguinal nodes appeared a trifle sooner on the average in the operated pigs than in the controls. There was the usual compensatory hyperplasia of the remaining suprarenal gland. This suggests a demand for increased suprarenal function in tuberculosis.

Epinephrin Hypersensitiveness in Tuberculosis.—A study of cases of pulmonary tuberculosis and of cases in which a diagnosis of pulmonary tuberculosis had been made which showed a hypersensitiveness to injections of epinephrin was made by Heise and Brown. The epinephrin reaction was twice as frequent in the nontuberculous as in the tuberculous cases (14 and 29 per cent., respectively). Activity of the pulmonary focus, as determined by symptoms, played little, if any, part in occurrence of the reaction. Presumptive inactivity, as interpreted by roentgenoscopy, was accompanied by epinephrin hypersensitiveness about two and one-half times as often as when activity was present. The occurrence of tubercle bacilli seemed to be associated with a less frequent reaction than when tubercle bacilli were absent (10 and 17 per cent., respectively). No patient with a history of pleurisy with effusion reacted to epinephrin. As the extent of the disease becomes greater, the tendency to react to epinephrin apparently diminishes (27 per cent., 15 per cent., 9 per cent.). Tuberculous colitis apparently does not promote epinephrin hypersensitiveness.

Study of Goetsch Test.—The results of the study made by McBrayer suggest that the differential diagnosis of tuberculosis and hyperthyroidism will be made easier when after the subcutaneous injection of epinephrin between fifteen minutes and one hour and thirty minutes after the injection, there occurs: (1) a rise in systolic blood pressure of ten or more points and remaining above normal for fifty-five minutes or more; (2) increased pulse rate of ten or more points per minute, proportionate to the systolic rise; (3) an increase of pulse pressure of thirty-five or more points; (4) pulse irregular and varying in volume; (5) an increase in respiratory rate of four or more points per minute; (6) varying pupillary changes.

Circulatory Conditions with Lung Pathology.—Myocardial embarrassments of different types, Pritchard and Mortensen state, produce pulmonary signs and symptoms which are often misinterpreted. In many cases of bronchitis, where doubt of the cause exists, the use of digitalis results in the diminution of symptoms and physical signs, thereby making this drug of value in diagnosis as well as a therapeutic agent. In many cases with bronchial symptoms, such as are present in protracted colds, circulatory degeneration should be considered as a possible causative factor as well as upper respiratory affections and pulmonary tuberculosis. Râles due to circulatory causes are not always basal and may be found over other parts, even one or both apices.

Canadian Medical Association Journal, Toronto

October, 1920, **10**, No. 10

Medicine and War. G. Adami.—p. 881.
Plea for Better Obstetrics. R. Ferguson, London, Ont.—p. 901.
Treatment of Hemorrhage in Medical Diseases. A. H. Gordon, Montreal.—p. 905.
*Treatment for Early Syphilis. G. O. Scott and G. H. J. Pearson, Ottawa.—p. 916.
Syphilis of Central Nervous System; Its Early Recognition and Treatment. A. R. Robertson, Seattle, Was.—p. 924.
More Recent Developments in Use of Roentgen Rays in Commerce. J. D. Morgan, Montreal.—p. 930.
*Significance of Calcium-Ion in Cell; Experimental Tetany. J. B. Collip, Edmonton.—p. 935.
*Roentgen-Ray Treatment of Case of Leukosarcoma with Mediastinal Involvement. H. H. McIntosh, Vancouver.—p. 946.

Treatment of Early Syphilis.—A course of treatment is described by Scott and Pearson to aid the general practitioner to avoid the dangers of inadequate treatment of syphilis on the one hand and of producing medicinal intoxication of the patient on the other. Continued treatment with mercury and potassium iodid, alternating with rest intervals, with occasional injections of arsphenamin is regarded as the most effective method of controlling the disease. General tonics should be administered during the rest intervals to combat the toxic effects of the antisyphilitic treatment and to raise the antibody production of the patient. This is as important as the actual treatment itself. Treatment for early primary syphilis should be continued for two years. Treatment for late primary and generalized syphilis should be continued for, at least, three years.

Calcium Ion in Motor Nerve Cells.—From the results reported by Collip it would appear that a decrease in the relative concentration of the calcium ion in the motor nerve cells acts as a stimulus and a tetanic seizure results. Collip suggests possible that "muscle cramp" manifested at time in swimmers and runners is due to a temporary alkalosis following excessive respiration.

Roentgen-Ray Treatment of Leukosarcoma of Mediastinum.—A widespread lymph node involvement in McIntosh's case disappeared rapidly after roentgenization, but the general condition of the patient became worse and death ensued.

November, 1920, **10**, No. 11

Goiter. F. N. G. Starr, R. R. Graham and W. L. Robinson, Toronto.—p. 977.
Goiter: Its Medical Treatment. J. M. Pearson, Vancouver.—p. 983.
Corelation of Results of Treatment of Goiter by Surgical and Roentgen-Ray Methods. G. H. Binghan and G. E. Richards, Toronto.—p. 988.
*Myelogenous Leukemia; Treatment by Benzene and Roentgen Ray. H. A. Lafleur, Montreal.—p. 996.
Diagnostic Value of Roentgen-Ray Examination in Pulmonary Tuberculosis. W. A. Wilkins, Montreal.—p. 999.
Thomson-Curtin Operation for Detached Retina; Report of Two Cases. L. De V. Chipman, St. John.—p. 1007.
Laboratory Diagnosis of Syphilis. W. S. Lindsay, Saskatchewan. p. 1011.
Carcinoma of Colon: Report of Three Cases. E. W. Allin, Edmonton.—p. 1021.
*Botulism in the Yukon. J. A. R. Glancy, Toronto.—p. 1027.

Benzene and Roentgen Ray in Myelogenous Leukemia.—A case is cited by Lafleur in which benzene (benzol, C_6H_6), with roentgen-ray treatment, unquestionably produced a marked improvement not only in the blood picture but on the patient's

general health, without inducing any of the untoward effects that in some cases have followed the administration of the drug.

Botulism in Yukon.—Glancy describes in detail the symptoms he noted when afflicted with botulism, analyzes twelve fatal cases and the histories of seven patients who recovered. The length of time before symptoms manifested themselves varied from twenty-six hours to five days—those who died being from twenty-six to thirty hours, which was the time in the majority of all cases, and those who lived being from twenty-six to seventy-two hours—with one exception which was five days. It was the right side throughout, which was affected to the greater extent in almost every case. The forearms were affected most often—the left in a general way—the right in distinct muscle groups—the weakness of the extensors of the forearm and hand being common to almost every case. There were no griping pains in the abdomen, and vomiting and diarrhea were not common symptoms. There was little deviation from normal in temperature or pulse rate, except when the patient was approaching death—and then only immediately before death. Somewhat regular irregularity as to good and bad periods—particularly during the convalescent period—was common to all. Both the intrinsic and extrinsic eye muscles were affected in practically every case. Every man (including those who died) had perfect control of mentality at all times. Headache was usually occipital; if parietal, it was usually left sided. Of those who survived, the author's was the only case in which there was extreme difficulty in breathing, and where the feeling of suffocation was so extreme for so long a period—also where there was intense pain over the aortic and pulmonary areas at the base of the heart.

Medical Record, New York

Nov. 6, 1920, **98**, No. 19

Arteriosclerosis. C. E. Nammack, New York.—p. 757.
Use of Fresh Vaccines in Whooping Cough. R. G. Freeman, New York.—p. 762.
Botulism; Report of Fifteen Cases. G. M. Randall, New York—p. 763.
Feeding of Normal Infants. S. McLean, New York.—p. 765.
Surgical Jaundice; Case of Primary Carcinoma of Pancreas. R. H. Fowler, Brooklyn.—p. 767.
Mesenteric Lymphadenitis. A. O. Wilensky, New York.—p. 770.
*Iodoform Poisoning from Gauze Packing Following Mastoid Operation. M. Grossman, New York.—p. 772.

Iodoform Poisoning from Gauze Packing.—In Grossman's case the symptoms were strongly suggestive of a meningitis. Rigidity of the neck and cranial nereve palsies were the only features lacking. The Kernig sign appeared twenty-four hours after the first iodoform packing was introduced. There was still some evidence of it fourteen days after the packing had been removed. There were associated with it frontal headache and a hyperesthesia so marked that the patient suffered agonizing pains with the slightest movement of the body. Active delirium did not develop, but the patient at times was confused and bordering on the point of active hallucinations and delusions. These periods were followed by dulness, apathy, and marked irritability. High fever was present and the pulse rate was correspondingly increased. The tongue was dry and had a brownish coating. Striking pallor and emaciation were present early, and there was marked weakness with hypotonia of the muscles. The deep reflexes were diminished almost to the point of disappearance—the knee jerks more than the ankle jerks. The patient was nauseated and refused all food. Vomiting did not occur until four days after the removal of the gauze. A discrete papular eruption appeared.

Nov. 13, 1920, **98**, No. 20

Prevention of Respiratory Diseases. C. Lynch, Washington, D. C.—p. 799.
Epidemic Encephalitis. I. H. Pardee, New York.—p. 804.
*Mendelianism of Migraine. J. A. Buchanan, Rochester, Minn.—p. 807.
Nasal Deformities Due to Submucous Operation. Their Prevention and Treatment. W. W. Carter, New York.—p. 808.
Aural Aftermaths of Influenza. A. Bardes, New York.—p. 810.
Vaccines in General Practice. A. G. Huegli, Detroit.—p. 813.
Management of Malignancy by Combination of Methods. J. T. Stevens, Montclair, N. J.—p. 815.

Mendelianism of Migraine.—Of 1,300 persons suffering from migraine whose histories are reviewed by Buchanan, the families of 127 were investigated as to the question of heredity. In 100 families, either the father or the mother had migraine, with 143 migrainous children and 488 nonmigrainous children, or a ratio of 3.13 to 1. Among seven families, in which the parents were migrainous, ten children had epilepsy alone or a migraine-epilepsy syndrome; thirty-seven children had neither epilepsy nor migraine, a ratio of 3.7 to 1. Seven families were tabulated as crossing of persons with dormant migraine, the migraine was not present in the father or the mother of the family, but was present in the brother, sister, father or mother of the parents of the families studied. In this group, thirty children had migraine and eighty-five did not have migraine, a ratio of 2.83 to 1. Three families were studied in which the presence of migraine in both parents was carefully investigated. All of the fifteen children of this group had migraine. The total number of children concerned in ths study by Buchanan was 198 with migraine and 610 without, a ratio of 3.08 to 1. He states that this places migraine in the mendelian ratio and definitely established the hereditary nature of the affection. There is no medication known that will alter its course; it is a distinct part of the patient's economy, and it will have no harmful influence on longevity.

Military Surgeon, Washington, D. C.

October, 1920, **47**, No. 4

Directions for Making Triple Typhoid Vaccine. F. F. Russell, H. J. Nichols and C. O. Stimmel, Washington, D. C.—p. 359.
War Experiences with Face and Jaw Injuries. V. P. Blair, St. Louis.—p. 379.
Report of Department of Health and Sanitation of United States Shipping Board for Period Nov. 16, 1917, to Nov. 15, 1918. P. S. Doane, Chicago.—p. 389.
American Red Cross Assistance to United States Medical Departments in United States. C. H. Connor.—p. 407.
Pediatric Conditions in France. E. M. Cole, Jr.—p. 418.
Foot Abnormalities and Their Management in Light of Army Experience. T. S. Mebane.—p. 428.
Medical History of General Scott's Campaign to City of Mexico in 1847. L. C. Duncan.—p. 436.
Recurrence of Influenza in a Regiment. S. Bradbury.—p. 471.
Resection of Elbow Joint. H. A. Phillips and E. M. P. Seward.—p. 473.
History of Medical Activities of Office of Provost Marshal General Under Selective Service Act. F. R. Keefer.—p. 475.

Modern Medicine, Chicago

October, 1920, **15**, No. 4

What to See in Montreal, the Beautiful. E. H. Eaton.—p. 251.
Suggestions for Community Hospital Program. C. E. McCombs, New York.—p. 257.
Small Southern Hospital. C. W. King, Shreveport, La.—p. 260.
New Roentgen-Ray Laboratory at the Albany Hospital. J. M. Berry, Albany, N. Y.—p. 264.
Uses for Wall Paper and Paper Dolls. M. H. Barker, Worcester, Mass.—p. 266.
Keeping Records at Englewood Hospital, Chicago. R. T. Olsen, Chicago.—p. 269.
Hospital Ventilation. K. Meier, Winterthur, Switzerland.—p. 272.

Nebraska State Medical Journal, Norfolk

October, 1920, **5**, No. 10

Heart Cases. R. B. Adams, Lincoln.—p. 289.
Treatment of Bronchopneumonia in Infancy and Childhood. W. O. Colburn, Lincoln.—p. 289.
Obstructions of Lower Urinary Tract. E. G. Davis, Omaha.—p. 292.
Adynamic Ileus. C. C. Johnson, Lincoln.—p. 296.
Management of Cystic Duct in Gallbladder Disease; Report of Case of Perforation. A. C. Stokes, Omaha.—p. 298.

New York Medical Journal

Nov. 6, 1920, **112**, No. 19

Endocrines in Gynecology. W. P. Graves, Boston.—p. 697.
Obstetric Department of a Modern School. B. C. Hirst, Philadelphia. p. 701.
Treatment of Displacement of Uterus. P. B. Bland, Philadelphia.—p. 702.
Diseases of Cervix Uteri. A. Heineberg, Phildelphia.—p. 706.
Amputation of Cervix Uteri. J. N. West, New York.—p. 710.
Cervical Laceration, Cystocele, Prolapsus Uteri and Multiple Fibromas. W. P. Fowler, Rochester, N. Y.—p. 712.
Rôle of Rectal Examination in Obstetrics. W. E. Parke, Philadelphia.—p. 716.
*Cesarean Section for Eclampsia. E. G. Langrock, New York.—p. 718.
Repair of Injuries to Pelvic Floor. W. C. Cummings, Oklahoma City, Okla.—p. 718.
Female Pelvic Ureters. D. W. Tovey, New York.—p. 720.
Value of Abdominal Exercises Before and After Delivery. H. Koster, Brooklyn.—p. 722.
Periodic Headaches of Ovarian Origin. G. K. Abbott, Sanatorium, Calif.—p. 724.

Cesarean Section for Eclampsia.—The interesting features of Langrock's case were: (1) the treatment of the eclampsia by cesarean section, the patient having no convulsions after the delivery; (2) the edematous condition of the tissues in eclampsia which must be taken into consideration in placing the sutures; (3) the fortunate outcome of the case in spite of the possibility of peritonitis.

New York State Journal of Medicine, New York

October, 1920, **20**, No. 10

Radical Abdominal Operation for Cancer of Cervix. R. Peterson, Ann Arbor, Mich.—p. 313.
Radium Treatment of Uterine Cancer. C. F. Burnam, Baltimore.—p. 316.
Surgery of Uterine Fibroids. E. J. Ill, Newark, N. J.—p. 319.
Treatment of Uterine Fibroid and Uterine Hemorrhage by Means of Radium and Roentgen Rays. G. E. Pfahler, Philadelphia.—p. 321.
Special Points in Surgery of Gallbladder and Ducts. G. W. Crile, Cleveland.—p. 333.

Philippine Journal of Science, Manila

May, 1920, **16**, No. 5

Corrosion of Iron in Sulphuric Acid, Effect of Chromium Compounds. G. W. Heise and A. Clemente, Manila.—p. 439.
Identity of Aegiphila Viburnifolia Jussieu. E. D. Merrill, Los Banos.—p. 449.
Some Aspects of Salt Requirements of Young Rice Plants. R. B. Espino, Los Banos.—p. 455.
Higher Basidiomycetes from Philippines and Their Hosts. O. A. Reinking, Los Banos.

Psychobiology, Baltimore

December, 1920, **2**, No. 6

Integration of Movements in Learning in Albino Rat; Adjustment of Organism to Environment. J. L. Ulrich.—p. 455.

Public Health Journal, Toronto

September, 1920, **11**, No. 9

Rôle of Laboratory in Control of Venereal Diseases. R. H. Mullin.—p. 339.
Control and Rehabilitation in Connection with Veneral Disease Problem. E. F. Murphy.—p. 405.
Plan for More Effective Federal and State Health Administration. F. L. Hoffman.—p. 413.
Coordination of State and Private Enterprises in Public Health Work. W. H. Hattie, Halifax, N. S.—p. 418.

October, 1920, **11**, No. 10

Rôle of Voluntary Socities in Care of Public Health. J. Riddington.—p. 437.
Nursing Standards. H. Randal.—p. 444.
Preventive Medicine and General Practitioner. W. E. George.—p. 450.
Plan for More Effective Federal and State Health Administration. F. L. Hoffman.—p. 455.
Public Health Conference. J. J. Middleton.—p. 458.
Social Background. Present Need of Tuberculosis Campaign in Canada. J. H. Holbrook.—p. 461.

Southern Medicine, El Paso, Tex.

September, 1920, **4**, No. 9

Local Anesthesia. T. B. Smith, Morenci, Ariz.—p. 1.
Botulism; Report of Cases. W. G. Randell, Florence, Ariz.—p. 9.
Migratory Consumptive as Financial Burden to Southwest. A. H. Williams.—p. 13.

October, 1920, **4**, No. 10

Functional Nervous Disability. P. E. McChesney, El Paso.—p. 1.
Successful Treatment of Tuberculous Meningitis. F. H. Rederwill, Phoenix, Ariz.—p. 8.

Southwest Journal of Med. and Surg. El Reno, Okla.

August, 1920, **28**, No. 8

Management and Treatment of Peripheral Nerve Injuries. F. R. Teachenor, Kansas City, Mo.—p. 133.
Mixed Vaccines Necessary in Treatment of Pneumonia. G. H. Sherman, Detroit.—p. 137.

Tennessee State Medical Ass'n Journal, Nashville

October, 1920, **13**, No. 6

Displaced Uterus. J. F. Gallagher, Nashville.—p. 201.
Lethargic Encephalitis. E. R. Zemp, Knoxville.—p. 205.
Treatment of Empyema W. C. Dixon, Nashville.—p. 208.
Preventive Medicine. J. G. Eblen, Lenoir City.—p. 211.
Treatment of Gonorrhea. T. D. Hall, Nashville.—p. 215.
Debt of Public to Medical Profession L. M. Freeman, Granville.—p. 217.
Gastro-Intestinal Carcinoma. R. A. Barr, Nashville.—p. 220.
Vivisection. S. D. Hubbard, Nashville.—p. 222.

United States Naval Medical Bulletin, Washington, D. C.

October ,1920, **14**, No. 4

Surgical Activities at Naval Hospital, New York, for a Period of Eight Months—p. 511.
War Wounds of Joints. L. Delrez, Liége, Belgium.—p. 537.
The Founders of Naval Hygiene. Lind, Trotter and Blane.—p. 563.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Tuberculosis, London

October, 1920, **14**, No. 4

Hospital School for Treatment of Surgical Tuberculosis in Children. T. H. Martin.—p. 145.
Principles Involved in Selection of Occupations for Consumptives. P. C. Varrier-Jones and G. Woodhead.—p. 154.
Racial Differences in Susceptibility to Tuberculosis. S. L. Cummins.—p. 160.
Tuberculosis of Ear. D. Guthrie.—p. 164.
Campaign Against Tuberculosis in Wales. D. W. Evans.—p. 166.

British Medical Journal, London

Oct. 23, 1920, **2**, No. 3121

Psychotherapy. T. A. Ross.—p. 619.
Defensive Value of Normal Mucus Formation, and Theory of Catarrh. F. G. Crookshank.—p. 627.
Case of Lethargic Encephalitis Treated by Hexamine. S. Crawshaw.—p. 628.
Two Cases of Intestinal Tumor: Operation: Recovery. W. Balgarnie.—p. 629.

Oct. 30, 1920, **2**, No. 3122

Surgery Good and Bad. C. F. M. Saint.—p. 649.
Present Position of Cancer Research. J. A. Murray.—p. 653
*Secondary Forms of Polycythemia Rubra; Ayerza's Disease, etc. F. P. Weber.—p. 658.
Action of Chemiotherapy. J. E. R. McDonagh.—p. 660.
Effects of Emotions on Gastric Secretion and Motility in Human Being. T. I. Bennett and J. F. Venables.—p. 662.
*Case of Castellani's Acladiosis. R. W. Mendelson.—p 664.
Gunshot in Appendix. R. H. Hall.—p. 664.

Secondary Forms of Polycythemia Rubra.—Certain conditions accompanied by erythrocytosis (erythroblastic reaction) which may be mistaken for erythraemia—that is, for polycythemia rubra of unknown cause, apparently due to primary hyperplasia of the erythroblastic tissues, are classified by Weber. (1) So-called polycythemia hypertonica, or hypertonia polycythemica (Geisbock, etc.). In these cases there is no obvious splenomegaly and the brachial systolic blood pressure is high (usually 180 mm. Hg, or higher), whereas in true cases of erythemia the blood pressure is not high (usually from 120 to 150 mm. Hg), unless chronic interstitial nephritis is present as a complication. (2) Splenomegalic polycythemia rubra connected with tuberculosis of the spleen. Tuberculosis, or other disease of the splenic pulp, may occasionally in some way upset the normal function of the organ, and thus (somewhat as splenectomy does) produce a rise in the erythrocyte count, quite apart from that due to the activating effect of small quantities of tuberculin in the circulating blood on the erythroblastic elements of the bone marrow. (3) Secondary polycythemia rubra (of longer or shorter duration), with splenomyegaly, connected with a condition of visceral blood stasis of chronic thrombotic origin in the splenic and portal veins. (4) Chronic "cardiopulmonary" cyanosis, with secondary polycythemia rubra ("cardiacos negros" of Ayerza—"Ayerza's disease" or "Ayerza's syndrome"). Mostly males, between 30 and 50, form this clinical group. They suffer from chronic cyanosis (varying in degree from time to time), with marked dilatation of the blood capillaries and venules (telangiectases) of the face. Diffuse chronic bronchitic sounds are present, with evidence of pulmonary emphysema, dilatation of the right side of the heart, and passive congestion of the liver, which reaches down below the ribs. All these signs vary in degree from time to time, and the active bronchitis may temporarily disappear. The spleen, though it may be enlarged in some cases, can seldom be felt below the costal margin by ordinary palpation. The fingers are sometimes clubbed. The brachial systolic blood pressure is not raised (is relatively low rather than high) in cases not associated with chronic interstitial nephri-

tis. Mostly the patient gives a history of having suffered for many years from "asthma" or from recurrent attacks of bronchitis. At last dyspnea occurs on any slight muscular exertion or becomes continuous, and exacerbations of bronchitis are frequent; the cyanosis becomes deeper, of a dark purple color; subcutaneous edema, and often also more or less ascites, develop; signs of carbonic acid poisoning ("bronchite noire") and failure of the right side of the heart precede death. Hypertrophy and dilatation of the right side of the heart are found on postmortem examination; the wall of the right ventricle is sometimes as thick (or nearly so) as that of the left ventricle.

Castellani's Acladiosis.—A Chinese coolie, working in a rice mill, first noticed a small red spot below the left knee; there was a very slight amount of itching but no pain, and within a month this spot had increased in size and developed into an ulcer. Several other spots appeared within the neighborhood of the first one and passed through the same stages. At no time was there much discomfort, and only a very slight amount of itching. On close examination, lesions that very closely resembled yaws were observed on the left leg. They were covered with a thin yellow scab, which revealed on removal a collection of thick creamy pus. After thorough cleansing the lesions presented, instead of the mulberry appearance of yaws, a sharp depression of a red granulating tissue. The borders of these ulcers were clearly defined, with a rounded surface of normal tissue. There was no gland involvement whatever, and the rest of the body was free from any skin trouble. The blood examination was negative, except for a slight leukocytosis. The urine examination was negative. The physical examination except for the skin trouble was also negative. Microscopic examination of cultures on carrots, potatoes and glucose agar showed the presence of fungus growing in symbiosis with a coccus, which could with difficulty be separated from it. The fungus had all the morphologic and cultural characters of *Acladium castellanii* (Pinoy, 1916).

Indian Journal of Medicine, Calcutta

July, 1920, **1**, No. 11

*Use of Copper Margosate in Cancer. K. K. Chatterji.—p. 41.
Influenza Epidemic in Calcutta. B. Majumdar.—p. 46.
Influenza Epidemic in Calcutta. T. Sur.—p. 57.
*Treatment of Tetanus by Subcutaneous Injection of Magnesium Sulphate. M. L. Kundu.—p. 70.
Two Probable Cases of Anaphylaxis. A. R. Chakravarti.—p. 74.
Cytology of Opalina Scalpriformis, Ghosh. E. N. Ghosh.—p. 78.
Case of Hemiplegia (Fat Embolism) with Gangrene of Leg Following Incision of Swelling over Tibia. R. B. W. V. Kane.—p. 85.

Copper Margosate in Cancer.—Weekly injections of copper margosate combined with ethyl ester margosic, three-eighths grain of the former and 0.5 c.c. of the latter, was the treatment given by Chatterji in a series of cases of sarcoma and carcinoma. Good results are reported.

Treatment of Tetanus.—The treatment of tetanus adopted in the Rangoon General Hospital consists of (1) a dose of antitetanic serum 1,000 to 1,200 units, immediately on admissions; (2) free opening of the wound but no application of strong antiseptic; (3) subcutaneous injection of a sterilized solution of chemically pure magnesium sulphate, 10 c.c. of a 20 per cent. solution for an adult, repeated every four hours, until spasm diminishes; (4) injection of one-quarter grain morphin tartrate, if patient is sleepless, and 25 grains bromids internally, every four hours, without any chloral; (5) no attempt is made to feed the patient by the mouth or by the nasal tube, as that is liable to excite spasms which would be distinctly harmful to the patient. In some cases rectal feeding with 4 gm. glucose or extract of malt, dissolved in 6 or 8 ounces of physiologic sodium chlorid solution, is administered, and medicines are also administered by the same route; (6) careful nursing, which is the last but not the least consideration.

Japan Medical World, Tokyo

Sept. 18, 1920, **10**, No. 38

*Treatment of Cholera. S. Ichikawa.—p. 815.
Experimental Kakke-Like Disease and Barlow's Disease. K. Kumagaya.—p. 816.
Production of Lipochrome in Renal Tubular Epithelium of Dog by Injection of Phosphorus. T. Onda.—p. 816.

Physiologic Sodium Chlorid Solution in Cholera.—Ichikawa commends the treatment of cholera by intravenous injection of physiologic sodium chlorid solution, plus 5 per cent. sodium bicarbonate solution, in equal amounts, 100 c.c. The quantity for one injection is determined by observing the recovery of the patient from cyanosis and anguish. Several thousand cubic centimeters may be injected at one operation.

Sept. 25, 1920, **10**, No. 39

Disinfection of Japanese Room. S. Toda and K. Fujiwara.—p. 839.
*Use of Diphtheria Serum in Treatment of Influenza.—T. Gomibuchi.—p. 840.

Diphtheria Antitoxin Treatment of Influenza.—Diphtheric antiserum was injected by Gomibuchi in doses of 3 c.c. for cases in an initial stage of infection or on the first or second day of the manifestation of symptoms. In a serious case or a case with bilateral pneumonia, 10 or 12 c.c. of the serum was injected for the initial injection and then on the fourth day 5 c.c. was given. After that 3 c.c. was injected every fourth day as long as the symptoms lasted.

Journal of Tropical Medicine and Hygiene, London

Oct. 15, 1920, **23**, No. 20

*Chaulmoogra Oil in Leprosy. T. A. Henry.—p. 249.
*Six Cases of Castellani's Bronchomoniliasis. I. Jacono.—p. 250.

Chaulmoogra Oil in Leprosy.—Henry states that the evidence at hand seems to indicate that it is the acids of the chaulmoogric series to which chaulmoogra and hydnocarpic oils owe their value, and that possibly the lower homologues are the more active members of the series. Whether this action on the bacillus of leprosy and other acid fast bacilli is, as the work of Walker and Sweeney in California suggest, specific to acids of this type or is merely a special case of a more general action on such bacilli exerted by low melting unsaturated acids or their esters, as appears to be indicated by recent work by Rogers and others, only further research can determine.

Bronchomoniliasis.—The monilia fungi which Jacono isolated in his cases belong to the *Monilia balcanica* Castellani group, *Monilia krusei* Cast. group, *Monilia tropicalis* Cast. group, and *Monilia guillermondi* Cast group.

Lancet, London

Oct. 23, 1920, **2**, No. 17

Birth and Growth of Science in Medicine. F. W. Andrewes.—p. 829.
Causes of Nervous Diseases. E. S. Reynolds.—p. 834.
Medical Requirements for Air Navigation. M. Flack.—p. 838.
*Food Values in Tuberculosis. H. De C. Woodcock and A. G. Ruston.—p. 842.
Symptoms Resembling Tabes Dorsalis, Arising After Antityphoid Inoculation. J. S. Bury.—p. 844.
Surgical Treatment of Malignant Disease of Lip and Jaw. P. P. Cole.—p. 845.
Senecio Disease, or Cirrhosis of Liver Due to Senecio Poisoning. F. C. Willmot and G. W. Robertson.—p. 848.
*Family History in Case of Angioneurotic Edema. C. Cameron.—p. 849.
"Acidosis" Following Bee Stings. J. O. Beven.—p. 850.

Food Values in Tuberculosis.—Woodcock and Ruston state that tuberculous patients require more food than the average amount needed by the ordinary laborer outside. The diet must be rich in protein and fat: protein, from 4 to 4½ ounces per head per day; fat, 4 ounces per head per day. The fat should be largely animal fat, particularly in the form of milk and milk products. If margarin is used, it should be as oleomargarin and not made from vegetable fats. Eggs should be in the dietary, and when they are not supplied, their place should be taken by an extra amount of meat given according to accurate calculation. Whole meal bread, beans, peas and lentils should always be used, together with a plentiful supply of fresh fruits and vegetables grown in the sanatorium grounds. Two pints of milk per day is the amount suggested for each patient.

Familial Angioneurotic Edema.—In the case cited by Cameron the condition was familial, and was traceable to the patient's paternal grandmother. In all the members the outstanding signs have been those of "bilious attacks." These invariably appeared in childhood, and at a later period, usually coincident with the age of probable puberty, edema

signs manifested themselves. Both males and females participated in the transmission and were equally affected by the condition. The edema never appeared without accompanying gastric symptoms, but the gastric symptoms appeared without the edema. The onset of edema seemed to cut short a bilious attack, and in one member of the family this seemed to guarantee a longer period of immunity from such attacks. In Cameron's patient the periodicity of the attacks suggests a menstrual relationship, but she is positive that in other female members of the family the attacks have been too frequent to have any such relationship.

Oct. 30, 1920, **2**, No. 18

*Nature of Ovarian Function. W. B. Bell.—p. 879.
Parliament and Public Health. F. E. Fremantle.—p. 884.
*Myth of "Atypical" Enteric Fever. R. P. Garrow.—p. 886.
*Hereditary Factor in Tuberculosis. K. Pearson.—p. 891.
Treatment of Oriental Sore by Roentgen Rays. F. C. Ormerod.—p. 893.
*Celiac Infantilism: Its Fat-Digestion and Treatment by Bile Salts. R. Miller, J. Webster and H. Perkins.—p. 894.
Unusual Complications in Pneumonia. H. W. Hales.—p. 897.
*An Unusually Large Renal Calculus. H. B. Mylvaganam.—p. 898.

Results of Ovarian Grafting.—Of ninety-eight cases of ovarian grafting in the human subject done by Bell, sixty-seven are analyzed. In fifty-seven of these cases menstruation was possible, but menstruation occurred in only thirty-eight. No menopausal symptoms were present in nine cases. They were present in ten cases. Menstruation was impossible owing to supravaginal or complete hysterectomy having been performed in ten cases and in seven of these menopausal symptoms did not occur. Functional results were obtained in fifty-four cases. In one case, a small graafian follicle retention cyst developed, and this led to continuous bleeding from the uterus. In two other cases painful swelling in the graft associated with rather profuse menstruation was observed for some months. The longest period during which any patient menstruated regularly is four years. Other patients are still menstruating regularly—that is, with no longer interval than eight weeks—for over three years. His experience leads Bell to advocate very strongly the practice of ovarian grafting in suitable cases, as a measure of necessity, which can never be weighed in the balance against the preservation of the natural connections of the normal ovary.

Enteric Fever Runs True to Type.—Enteric fever (typhoid and paratyphoid) says Garrow, far from being the "protean disease" it is usually represented to be, is remarkably constant in its clinical manifestations and true to type. This applies to the inoculated and to the uninoculated. "Atypical" enteric fever is a myth, in the creation of which two chief factors have operated, namely: (*a*) Smallpox occurring in the vaccinated is so modified as to be frequently diagnosed as the milder disease, chickenpox. While that may be good reason for expecting that enteric fever in the inoculated should be similarly modified in severity, it does not support a belief that it is so modified in character as to resemble such divers diseases as malaria, trench fever, and dysentery in their classical forms. (*b*) A far more important factor has been a lack of cooperation between workers in the wards and in the laboratory, and failure to coordinate their findings. When clinical and laboratory findings have conflicted the latter have prevailed, because laboratory investigation of disease has been generally regarded for some reason to be more "scientific" than bedside observation. The truth, however, is gaining ground that science in medicine is not confined to the laboratory. The bedside has its victories no less than the bench. The flimsiest piece of evidence from the laboratory has often been accepted as proof of enteric infection in the face of bedside evidence which renders such a diagnosis untenable. The physician has thus allowed himself to be completely dominated in the matter of diagnosis by the pathologist. Diagnosis is the function of the physician; the pathologist's duty is to supply certain of the data for diagnosis. Anti-enteric inoculation is the gift of practical bacteriology to preventive medicine, and is probably the greatest victory known to preventive medicine since Jenner's discovery of vaccination against smallpox. It would be a strange irony if the full fruits of this victory were lost amidst the clinical chaos resulting from the undue domination of bacteriology (and especially academic bacteriology) over clinical medicine.

Heredity in Tuberculosis.—The main point made by Pearson is that the theory of an inherited resistance is not affected in any way by the well known fact that isolated groups of mankind have little resistance to tuberculosis; it is rather what we should expect on the theory of evolution by natural selection with the transmission of hereditary characters. The "hereditary" transmission of syphilis is not "heredity" in the modern sense at all, and the sooner the term is discarded the clearer will be medical and popular ideas on the topic of inheritance.

Celiac Infantilism.—The evidence presented by Miller and others suggests, that during the stages of fatty diarrhea in celiac cases bile salts may cause an improvement in fat absorption; while in the quiescent stages, when the stools are comparatively normal, their action is much slighter. On the further question as to whether the fatty diarrhea of celiac disease may be attributed to a failure in the secretion of bile salts, many more observations are evidently required before this opinion could be proved correct. In the one case examined it was not possible to detect the presence of cholalic acid in the feces before bile salts were given; but the clinical effects of the use of bile salts were certainly not sufficiently striking or complete to prove this view, which Miller thinks will ultimately be found to be correct. It is possible that the excessively fatty contents of the intestine may set up a transient catarrhal enteritis, which itself may limit further the absorption of fat. Over this, bile salts would have no immediate effect. A case is reported in which at the age of 7 years rickety changes occurred in the long bones, a condition not previously recorded in connection with celiac infantilism. In every case the figures obtained were considerably heightened when bile salts were being given. In the case of the higher figures the test no longer gave quite such clear cut results as in the lower range of figures. The authors were not able to reproduce the alteration in the diastase number by adding a trace of bile salts artificially to a urine whose urinary diastase number was known.

Large Kidney Calculus.—A calculus weighing 3 pounds was found in a kidney pelvis by Mylvaganam in a case without manifesting any clinical sign or symptom in its early stage. On account of its rapid growth during the last six months the hardness of the tumor, absence of renal colic from the commencement, the presence of blood in the urine during the early stage, and rapid emaciation, the tumor was thought to be of malignant nature. The possibility of a renal calculus was never entertained.

Medical Journal of Australia, Sydney

Sept. 25, 1920, No. 13

Red Cell Refusion in Production of Therapeutic Serums. W. J. Penfold.—p. 307.

Oct. 2, 1920, **2**, No. 14

Evolution of Otorhinolaryngology. H. J. Marks.—p. 331.
Two Intestinal Parasites (Ancylostoma and Iodameba) in Pigs. F. W. O'Connor.—p. 337.
Neuroses. D. M. McWhae.—p. 337.

South African Medical Record, Cape Town

Sept. 25, 1920, **18**, No. 18

Wassermann Reaction: Its Uses and Abuses. C. Lundie.—p. 342.
*Senecio Disease or Cirrhosis of Liver Due to Senecio Poisoning. F. C. Willmot and G. W. Robertson.—p. 346.

Senecio Disease.—In 1918 certain cases of sickness of obscure causation occurred in the George district of the Cape Province. Whole families had suffered from time to time from a complaint the chief symptoms of which were abdominal pain and vomiting, with ascites. It was suggested that the disease was of dietic origin, and samples of meal and wheat, bread from which was known to have been eaten for some time by affected persons, were examined. Investigations showed that the plants known as Senecio ilicifolius and Senecio burchelli grow as weeks in the wheat fields at George, and that when the wheat is threshed the seeds and portions of these plants frequently remain behind and are sold with the wheat. Experimental animals fed on portions or seeds of these plants developed symptoms and manifested postmortem appearances similar to those noted in man. Willmot and Robertson report five cases and give the details of animal experiments.

Bulletin de l'Académie de Médecine, Paris

Oct. 5, 1920, **84**, No. 30

*Infants of Tuberculous Mothers. L. Bernard and R. Debré.—p. 86.
*Operative Cure of Angina Pectoris. T. Jonnesco.—p. 93.
Two Nails and a Knitting Needle Driven into Brain in Futile Attempt at Suicide. H. Reynès.—p. 102.

Infants of Tuberculous Mothers.—Bernard and Debré conclude from 123 cases that the infant of a tuberculous mother does not inevitably contract the disease at once; some were saved even after from eight days to three months of contact with the tuberculous mother. None of the infants failed to contract the disease with over six months of contact. The contaminated infants almost all died within a month after being taken from the mother, even those that seemed healthy at first. Hence if the infant taken from a tuberculous mother survives the second month, there is reason to hope that it will survive, but only a series of negative tuberculin skin reactions will confirm that the child is sound. They commend boarding out these infants in country families. Only 18 children survived of the 58 with mothers with bacilli in the sputum, but 57 survived of the 65 mothers with "closed" tuberculosis.

Operative Treatment of Angina Pectoris.—Jonnesco applied in 1896 total resection of the cervical sympathetic, including the first thoracic ganglion, in treatment of epilepsy and exophthalmic goiter, and he later applied the same treatment to glaucoma and to migraine. He here reports that he performed the same operation in 1916 to relieve angina pectoris in a man of 38, a syphilitic, inclined to abuse of alcohol and tobacco. He had five extremely severe attacks of angina pectoris in four months, and the aorta and heart were enlarged. Jonnesco assumed that the resulting irritation of the cardio-aortic plexus induced by reflex action the symptoms of angina pectoris, and that the reflex arc could be broken up by interrupting the communication between this plexus and the nerve centers involved in production of the angina pectoris. There has been no further attack during the four years to date, nor any symptoms remotely suggesting it. The symptoms had been limited to the left side, and the resection was on that side alone. There is no atrophy of the muscles of the face although there is some asymmetry from the eyeball's sinking in and the contraction of the pupil, but the man expresses great gratitude for having been freed from his *horrible maladie*.

Bulletin Médical, Paris

Sept. 25, 1920, **34**, No. 46

General Principles of Endocrine Therapy. L. Hallion.—p. 853.
*Thyroid and Pituitary Organotherapy. E. Coulaud.—p. 859.
*Suprarenal Organotherapy. P. Pruvost.—p. 861.

Thyroid and Pituitary Treatment.—Coulaud says that although benefit from thyroid treatment is constant in myxedema, the benefit is inconstant but occasionally excellent in eczema, ichthyosis, asthma and migraine, and alone or plus ovarian treatment in scleroderma, and that there is one form of chronic rheumatism in which a thyroid origin seems probable on account of the benefit under thyroid treatment. It may also prove effectual when there are signs of hypothyroidism in pemphigus, chronic urticaria or trophedema, psoriasis, alopecia, hay-fever, constipation, rachitis and chronic nephritis, and even when deficient thyroid functioning alternates with exaggerated functioning. He says that as a rule goiters retrogress under thyroid treatment, but at the same time severe symptoms develop with cachexia. Even greater caution is required with exophthalmic goiter. But notwithstanding the mishaps sometimes observed, there have been cases displaying such distinct improvement as to justify the use of thyroid treatment under careful surveillance, especially of the cardiovascular system. This should avert all danger. He denounces it for the tuberculous, saying that he has witnessed flarings up of the disease coinciding with resumption of thyroid treatment. In concluding his remarks on pituitary treatment, Coulaud states that the suprarenals were found considerably hypertrophied in animals that had been given pituitary treatment for some time. He regards this as suggesting the necessity for this treatment in all cases of asthenia of suprarenal origin and in Addison's disease. The great contraindications for pituitary treatment are arteriosclerosis and nephritis. The results of pituitary treatment on nutrition, physical development and coagulation of the blood have been vague and inconstant to date. Probably the symptoms which we have been ascribing to the pituitary are in reality the result merely of compression of neighboring organs by the pituitary tumor. Even at its best, a pulverized glandular organ is not the product of the secretion of that organ, and we cannot expect that it will take the place completely of the latter.

Suprarenal Treatment.—After giving a long list of indications for suprarenal treatment, Pruvost cites as absolute contraindications arteriosclerosis, aneurysms, and high blood pressure, not only in persons with chronic kidney disease but also in the tuberculous when the fibrous process has entailed relative hypertension, exposing to danger of cerebral hemorrhage as well as to hemoptysis.

Bulletins de la Société Médicale des Hôpitaux, Paris

Oct. 8, 1920, **44**, No. 29

*Primary Typhoid Meningeal Symptoms. Delaret and Marcandier.—p. 1211.
*Interlobar Pleurisy. Dumitresco-Mante.—p. 1215.
*Acute Amebic Hepatitis. A. Panayotatou.—p. 1217.

Typhoid Meningeal Symptoms.—In the case reported the meningitic symptoms, lethargy, fibrillary tremor, jerking, ptosis, etc., suggested epidemic encephalitis, but serologic tests for typhoid were positive. Recovery followed intraspinal injection of 15 c.c. of the patient's own serum from blood drawn the day before.

Fetid Interlobar Pleurisy.—Rapid recovery followed neoarsphenamin by the vein, supplementing artificial pneumothorax, in a case of circumscribed suppurating interlobar pleurisy.

Blood Count in Acute Amebic Liver Disease.—In three cases the amebic liver disease subsided under emetin alone; in twenty-eight others operative measures became necessary. The leukocytes ranged from 18,000 to 35,000 in the suppurative cases, with from 72 to 80 per cent. polymorphonuclears, with two exceptions in which the leukocytes were 12,700 and 13,800. Emetin is useful to prepare the soil for the operation, even if it fails to cure alone the more extensive processes.

Journal de Médecine de Bordeaux

Oct. 10, 1920, **91**, No. 19

Flaring Up of Syphilis During Malarial Attack, with Localization at Site of Old Trauma. P. Noel.—p. 515.
Pathogenesis of Deformity of the Leg. G. Jeanneney.—p. 516.
*Correction of Exstrophy of the Bladder. H. L. Rocher and Lasserre.—p. 518.
The Medicine of Tomorrow. R. Cruchet.—p. 520.

Exstrophy of the Bladder.—Rocher and Lasserre tunneled the penis of the boy of 5½ with complete exstrophy of the bladder and epispadias, passing a large trocar and making the passage ample with the bistoury. Two tunnels were thus made, 5 mm. from the median line. Each ureter, previously isolated and tied over a sound, the ends of which had been cut off, was brought down through one of the tunnels and sutured to the mucosa of the penis. The operation took an hour and ten minutes but proved a complete success. Nearly a month later, after catheterizing the ureters, the bladder was excised and the defect covered with Indian flaps. The ureters function practically normally. A prosthesis is to be worn to protect against rubbing.

Presse Médicale, Paris

Sept. 22, 1920, **28**, No. 68

*Medical or Surgical Ulceration of Body of Stomach. L. Meunier.—p. 665.
*Congenital Dislocation of Hip Joint. F. Calot (Berck).—p. 666.
*Pathologic Repetition of Words. E. Schulmann.—p. 669.

To Distinguish Medical from Surgical Gastric Ulcer.—Meunier has found that fresh blood in the stomach content indicates an ordinary acute ulcer or erosion from the stomach tube, and calls for merely medical measures. But the finding of old, digested blood testifies in favor of an anatomically established ulceration, and for this, surgical measures are necessary. With fresh blood the hemoglobin dissolves in water, but with digested blood the hematin and the mucus coating it are insoluble in water, but dissolve readily in ammonia water. After two days of a test diet without meat,

the contents of the fasting stomach are aspirated. Then a glass of distilled water is poured through the tube into the stomach, the patient reclining. This is aspirated anew, and then through the same tube a glass of ammonia water (10 drops of official ammonia to 200 c.c. of distilled water) is poured into the stomach and this is aspirated. If there is no evidence of blood in the fluid either time, ulcer is excluded. If the first fluid shows most blood, the presumption is that it is fresh blood and the lesion amenable to medical measures. If the second fluid shows more blood than the first, this is a sign of digested blood, and this in turn indicates a surgical affection.

Recent Progress in Treatment of Congenital Luxation of the Hip Joint.—Calot cites as three important acquisitions: (1) The discovery in young children that the true acetabulum in 90 per cent. of the cases belongs to the ischium and not to the ilium portion of the hip-bone. (2) The discovery that the position to be given to the head and neck of the femur must be horizontal and transverse throughout the whole treatment, the rotation exactly equal to the angle of torsion of the upper end of the femur, and the abduction exactly equal to the angle of the slope of the neck. (This is the complement of the angle made by the axis of the neck with a straight line passing from the center of the head to the center of the bicondyle axis of the knee.) (3) The criterion of the cure by the appearance in the roentgen-ray picture of a large and solid horizontal vault of bone at the point of the true roof of the original acetabulum, that is, at the upper limit of the Y cartilage. This bone vault begins to form in the plaster cast. Twenty-two illustrations accompany the article, and a table showing abduction to correspond to different angles of the slope of the neck.

Pathologic Repetition of Words.—Schulmann describes a case of palilalia with palikinesia accompanying left hemiplegia and dysarthria in a woman of 76.

Sept. 25, 1920, **28,** No. 69

Visual and Pupil Disturbance with War Wounds of Spinal Cord. Mme. Dejerine and M. Regnard.—p. 673.
*Detection of Superfetation with Radiography. A. Schwaab.—p. 677.
Iodin Internally in Internal Disease. L. Cheinisse.—p. 678.

Superfetation.—Schwaab gives the roentgenograms of a pair of twins which apparently show by the development of the ossification centers that one twin was at term while the other twin was far from term, although both were born together. Another woman was delivered of twins not long after, one of which weighed 800 gm. less than the other, but the roentgen-ray findings were the same in each, confirming that both twins were of the same age. He accepts the first case as an instance of superfetation.

Sept. 29, 1920, **28,** No. 70

*Alkaline Salts in Pathogenesis of Edema. L. Blum.—p. 685.
*Intrapulmonary Injections of Antipneumococcus Serum. H. Sloboziano.—p. 688.

Alkaline Salts and Edema.—Among the conclusions from Blum's years of research on the rôle of the alkaline salts in the pathogenesis of edema, is the efficacy of potassium chlorid as a diuretic in certain cases of kidney disease with dropsy. In moderate doses it may supplement the action of other diuretics in other pathologic conditions. But this salt is far from harmless. With unstable heart or high blood pressure it is liable to induce serious and alarming symptoms, as well as minor disturbances, diarrhea, colics, chilliness and weakness. Hence it must be given very cautiously. In a case of nephritis with dropsy, described in detail, this drug was the only one that increased diuresis and reduced the weight. The patient took up to 25 gm. in twenty-four hours with no appreciable by-effects except slowing of the pulse and hypertonicity of the pneumogastric so that pressure on the vagus arrested the heart action. In certain other patients, however, various untoward effects were observed even with merely 10 gm. a day.

Injury from Direct Injection of Antipneumococcus Serum Into the Lung.—Sloboziano writes from Bucharest to describe the grave pathologic anatomic lesions found in the lungs of dogs after intrapulmonary injection of the antiserum. Even as little as 5 or 6 c.c. induced lacerations, hemorrhages, and edematous and congestive conditions.

Progrès Médical, Paris

Sept. 4, 1920, **35,** No. 36

*Tendon Transplantation in Treatment of Radial Paralysis. H. P. Achard and J. Jarkowski.—p. 387.
The Appendix as an Active Gland. E. Savini.—p. 390.
*Streptococcus Pleurisy. Marthe Giraud and others.—p. 393.

Tendon Transplantation for Radial Paralysis.—Achard and Jarkowski extol the ease and simplicity of this operation and its successful application in some clinical cases. They warn that it should not be attempted until absolutely sure that regeneration of the nerve is out of the question. War experiences have shown that when all is favorable the central stump grows toward the periphery at the rate of 1 or 2 mm. a day. To bridge a gap of 40 cm. would thus require from 200 to 400 days. Sometimes cicatricial tissue prevents the nerve fibers from reaching downward and this will have to be corrected before regeneration can occur. By pressing on the end of a regenerating nerve there will be a sensation of formication in the region innervated by this nerve, and as the end of the nerve pushes farther downward, this formication changes its site. By this means it is sometimes possible to trace the progress of the regenerating nerve. A muscle that has not responded to electric stimuli for a whole year or year and a half must be regarded as irremediably lost. The integrity of the median and ulnar nerves must be beyond question or it is useless to do the tendon transplantation for radial paralysis. Before operating, massage should be applied to the entire arm to get it in a hypervitalized condition, the skin and the joints supple. They work through three vertical parallel incisions, one on the median line in front and one on the median line at the back, all 12 cm. long. This gives ample access, enabling the tendons of the muscles innervated by the median and ulnar nerves to be sutured to the previously shortened extensor tendons. The details of the technic can be readily learned by any surgeon, they add, but at the best the results do not compare with regeneration of the nerve, and hence it should be only a last resource. The cast can be removed in two weeks and massage, mobilization, electricity and reeducation complete the functional recovery. By shortening the extensor tendons in the forearm, it is not necessary to make an incision in the back of the hand. There is also less danger of adhesions when the transplanted tendons run under the skin instead of being embedded in muscles.

Streptococcus Pleurisy.—The pleurisy developed during the decline of scarlet fever. Recovery followed three simple evacuating punctures, streptococci being found each time in the serofibrinous fluid.

Schweizerische medizinische Wochenschrift, Basel

Oct. 7, 1920, **50,** No. 41

The Importance of the Medical Decisions for the Success and the Usefulness of Social Insurance. G. Haemig.—p. 905.
*Right and Wrong Ways to Study the Psychology of Animals. W. Neumann.—p. 912.
Changes in Valves with Syphilitic Aortitis. N. Lupu.—p. 915. Cont'd.
*Pregnancy Toxicoses. P. Hüssy.—p. 918. Begun in No. 39, p. 857.

The Psychology of Animals.—Neumann has made a special study of the trained horse and dogs for which remarkable reasoning powers were claimed, ability to do mathematical examples, etc., the animals tapping out a kind of Morse alphabet. His conclusion is that it is absolutely impossible for animals to comprehend even language. Tone and gesture are what they obey.

Pregnancy Toxicoses.—Hüssy concludes this long study of the different pregnancy toxicoses by emphasizing that one explanation fits them all, namely, that they are the consequences of the passage of proteinogenous amins or their cleavage products into the blood stream. This variety throws light on the variety of the pathologic conditions liable to result. The amins come from the placenta or from the bowel, or from the endocrine glands, especially the pituitary-suprarenal system and the thyroid. His assertions are based on extensive personal research at the Hospital for Women at Basel and on the research of others, demonstrating the presence of these amins in the blood and seeking to trace them to their source. He presents evidence that the amins

of protein origin which get into the blood during pregnancy are probably of the histamin type. They are promptly inactivated by the liver, but when the liver becomes exhausted by the excessive work imposed on it, the nonmodified amins have a toxic action, and this is felt predominantly in organs which are constitutionally less resistant in the individual. The presence of the toxins can be easily confirmed by biologic tests, rabbit ear, surviving animal intestine, etc. These tests demonstrate the presence of a vasoconstrictin in the blood stream; then come edema, functional upset in the kidneys, with resulting high blood pressure, and hypertonia in general. If the retinal vessels feel the spasm, there is disturbance in vision; if the cerebral vessels are most affected, we have eclampsia. Edema, nephropathy and eclampsia are merely different degrees of the same disturbance. Eczema is never encountered as a true pregnancy dermatosis. The latter is traceable to derangement of the circulation. With prolonged vasoconstriction there is liable to be pruritus. If ergot is given for some time pruritus is liable to develop, and we know that the active substances in ergot are amins. In the uncontrollable vomiting of pregnancy, if the blood contains the vasoconstricting amins, the course is likely to be grave, but not in the absence of the vasoconstrictin, and the latter vanishes from the blood in the grave cases as improvement sets in.

Policlinico, Rome

Oct. 4, 1920, **27**, No. 40

*Serodiagnosis of Syphilis. F. Marcora.—p. 1107.
*Protein Therapy in Pneumonia. U. Monguzzi.—p. 1114.

Serodiagnosis of Syphilis.—Marcora obtained parallel results with the Wassermann and the Sachs-Georgi tests in 93.6 per cent. of 301 serums examined.

Protein Therapy in Pneumonia.—Monguzzi remarks that it is more than probable that the benefit supposed to be derived from the colloidal metals in therapeutics was due merely to the protein in the vehicle. The various theories explaining the efficacy of protein therapy are discussed and compared, and the experiences with it in nineteen cases of pneumonia are cited as quite satisfactory on the whole. General and local improvement was the rule, but there were exceptions to this. The protein injected was milk or gonococcus vaccine or both.

Semana Médica, Buenos Aires

June 24, 1920, **27**, No. 26

*Bile in Peritoneum. N. D. Rosso.—p. 835.
*Lower Segment of Pregnant Uterus. III. E. A. Boero.—p. 840.
Traumatic Sarcoma of Testicle. C. Cacciatore.—p. 850.
The Dietary for the Adult Man. L. Binet.—p. 852.

Bile in Peritoneum and Rabies.—In Rosso's case the boy of 14 developed rabies 108 days after he had been bitten by the rabid animal. He had been well until the last week when he had complained of severe pain in the side and the rabies symptoms soon followed. Necropsy disclosed that the peritoneum was full of bile, but no perforation of the gallbladder could be discovered. The viscera were laved in bile, and this explained the pain in the abdomen, and the shock from this may have been responsible for the rabies which otherwise might not have developed.

The Lower Segment of the Uterus.—Boero's profusely illustrated thesis is mainly a study of dystocia.

Archiv für Kinderheilkunde, Stuttgart

Aug. 31, 1920, **68**, No. 1-2

*Consolidation of Lung in Children. O. Herbst.—p. 1.
*Infectious Diseases in Origin of Feeblemindedness. Schott.—p. 10.
Vaccination of the Pregnant and Newly Born. H. Mensching.—p. 24.
Extensive Amyloid Degeneration in Boy of Eleven. C. Iseke.—p. 48.
Microscopic Capillary Picture of Intradermal Tuberculin Injection. O. Lade.—p. 58.
*The Oculocardiac Reflex in Children. E. Jenny.—p. 64.
Poisoning from Petrolatum Oil Vehicle. F. Tebbe.—p. 83.
*Operative Treatment of Pylorospasm in Infants. H. W. Fuchs.—p. 90.
*The Hypercholesterinemia with Nephrosis. H. Beumer.—p. 105.
Congenital Hypertrophy of Half of Body. Wyss.—p. 117.
*Roentgen-Ray Injury of Human Fetus. E. Aschenheim.—p. 131.
*Earliest Age for Tetany. B. Wolff.—p. 141.
*Familial Cirrhosis of Liver in Children. Olga Schuscik.—p. 144.

Catarrhal Consolidation of the Lung in Schoolchildren.—Herbst refers to consolidation of part of the lung during a mild bronchial catarrh with scarcely any impairment of the general health. The discovery of extensive consolidation and its long persistence are a surprise, but complete restitution finally follows. He advises to keep the child in bed until the lung clears up, unless warmth and quiet can be guaranteed in letting the child up in the room. No benefit from drugs was apparent, but deep breathing exercises seemed to help. A hot bath once a week, gradually increasing the temperature to 104 or 105.8 F. also proved useful, with a daily alcohol rub of the whole body in bed, for two weeks, and after this a rub with a towel wrung out of cool water. In one of the cases he describes, the consolidation of the left lower lobe had recurred twice, and there were still traces of it after 114 days. The cause seems to be obstruction of some bronchus by a peculiarly tenacious secretion in the absence of virulent bacteria.

Infectious Diseases as Factor in Feeblemindedness.—Schott found that in 6.36 per cent. of 1,100 feebleminded children, the parents or physician attributed the mental impairment to some infectious disease. He reviews this material in detail.

The Oculocardiac Reflex in Children.—Jenny has been applying the compression of the eyeball test to 250 children from 3 months to 15 years old at the Basel clinics. Disagreeable by-effects were observed in only two cases, vertigo and tinnitus in one and transient unconsciousness in a nervous girl with asthma. The pulse slowed down in all but 4.4 per cent. This negative group included five cases of tuberculous meningitis and two of diphtheria. The practically constant positive response indicates that the oculocardiac reflex is physiologic in children. He ranks it with the knee-jerk for testing the vegetative system, and especially for testing the heart, and found it particularly instructive as a control of digitalis treatment. Latent digitalis intoxication is revealed by the response to pressure on the eyeball. This test seems to be a substitute in children for test pressure on the vagus in the neck.

Pylorospasm in Infants.—Fuchs protests against comparing the outcome of internal and surgical treatment of stenosis of the pylorus in infancy as the cases seldom reach the surgeon until after the failure of long courses of internal treatment during which the debility may have become extreme. He regards the submucosa plastic operation on the pylorus, covering the gaping incision with omentum, without suturing the lips together (Weber-Rammstedt), as opening a new era in treatment of pylorospasm. He cites sixty-seven cases on record and describes a personal case, the results in all justifying the acceptance of this simple operative treatment by pediatrists who have hitherto shrunk from operative measures. Even when conservative measures have finally succeeded, the long period of disturbances leaves an indelible imprint on the child's development, manifest by nervous disturbance, motor insufficiency of the stomach, hyperacidity, etc., in later years.

Cholesterin Content of the Blood with Kidney Disease.—Only in nephrosis did Beumer find hypercholesterinemia; it seemed to be independent of edema, fever, etc., and could not be influenced by restriction of fat and lipoid in the diet in the few cases tested.

Roentgen-Ray Injury of Fetus.—Aschenheim describes the case of an imbecile boy, with sunken, nearly blind eyes, unusually small head, and occasional convulsions, which, he says, is the first authentic instance of roentgen-ray injury of the fetus. The otherwise healthy mother, then 37, was given deep roentgen-ray treatment for myoma of the uterus, with four or five exposures. Conception must have occurred about a month before the treatment was begun.

First Appearance of Tetany.—Wolff cites an instance of tetanoid manifestations in an infant only 7 weeks old.

Cirrhosis of Liver in Child.—The necropsy of the infant of 15 months showed hypertrophic cirrhosis of the liver. Two other children, also girls, had died in infancy with symptoms of acquired jaundice. No alcohol had ever been given the children. The family was otherwise healthy, the one boy having never shown signs of jaundice.

Deutsche medizinische Wochenschrift, Berlin

Aug. 19, 1920, **46**, No. 34

*Digitalis Therapy. T. Brugsch.—p. 933.
Pharmacologic Tests of Digitalis Preparations. Joachimoglu.—p. 935.
Auricle Expansion and Digitalis Medication. Pietrkowski.—p. 937.
*Diabetes Insipidus and Myxedema. L. Strauss.—p. 939.
Complicated Fractures of the Lower Leg. W. Budde.—p. 939.
Late Results in Penetrating Wounds of Lung. Alsberg.—p. 940.
Treatment of Gonorrhea in Women. Graebke.—p. 941.
*Angina Ludovici. G. Neugebauer.—p. 942.
Silver Arsphenamin and Sulphoxylate Arsphenamin. Meyer.—p. 943.
Otologic Hints for the General Practitioner. G. Brühl.—p. 944.

Digitalis Therapy.—Brugsch says that in a general way digitalis is indicated in cases in which an improvement of the circulation can be brought about by a lengthening of the diastole. A pronounced effect of digitalis is obtainable only with an insufficient, hypertrophied heart (left or right ventricle or both ventricles) as found in all forms of hypertonia, heart defects, idiopathic hypertrophy and hypertrophy of various origin (goiter, myoma, overexertion in sports, etc.). In cases of insufficiency we have more or less pronounced stasis, on which a lengthened diastole exerts a decided influence, or we have subnormal diastole which is made normal by digitalis, and at the same time there is an accelerated pulse rate which becomes normal through the stimulation of the vagus. In insufficiency of one or both ventricles without hypertrophy, and in vasomotor paralysis the situation is different. Insufficient but nonhypertrophic hearts show no slowing of the pulse following digitalis; especially is this noticeable in acute cardiac insufficiency as the result of myocarditis in infectious diseases; vasomotor paralysis is usually present. In all such cases no effect of digitalis therapy can be noted. As to judging the clinical effects of digitalis, blood pressure is of little value. Of much greater importance is pulse frequency. If the pulse becomes normal it is an indication of successful digitalis therapy. Doing away with stasis is always a very favorable sign.

Diabetes Insipidus and Myxedema.—Strauss reports a peculiar case of diabetes insipidus in a boy of 9. The volume of urine amounted to 7 liters daily. The boy became emaciated and suffered from intense thirst. But in spite of these symptoms he remained mentally alert and made good progress in his school work. At the age of 11 the quantity of urine and the extreme thirst gradually abated, but he became mentally inactive and fell behind in his studies at school. He became unduly fat, stopped growing, was often drowsy and would fall asleep over his work. At 15 he presented the picture of myxedema, whereas the volume of urine had become normal, indicating that he had recovered from the diabetes insipidus. He was given thyroid tablets. His drowsiness disappeared, his appearance became normal, he began again to grow and was able to fill an office position satisfactorily. He died at the age of 20 from pneumonia. Strauss was unable to find a similar case reported in the literature. He theorizes in explanation of the association of the two diseases.

Angina Ludovici.—Neugebauer reports two cases of angina ludovici in two women aged 72 and 73, which took a severe course and ended fatally, the one in three and the other in eight days from the onset of serious symptoms. Streptococci and staphylococci were present in large numbers in both cases. The two women had been much together.

Monatsschrift für Geb. und Gynäkologie, Berlin

August, 1920, **52**, No. 2

*Quinin as Oxytocic with Abortion. H. Hintzelmann.—p. 81.
*Medicolegal Import of Precipitate Delivery. J. Brock.—p. 85.
*Experiences with Contracted Pelvis. W. Wortmann.—p. 94.
Fatal Nonpuerperal Sepsis in Childbed. W. Schmitt.—p. 117.

Quinin as Oxytocic.—Hintzelmann found that quinin by the vein acts only when labor is already under way, that is, when the uterus is already sensitized. But it aids in dilating the os with incomplete abortion.

Precipitate Delivery.—Brock reports five cases of precipitate delivery, in two of which the mother had been accused of infanticide. He was able to show by the characteristic fracture of the vertex of the skull and the torn edges of the umbilical cord that the death of the child was explained by the fall on the floor.

Experiences with Contracted Pelvis.—Wortmann compares with minute details the experiences at the Bonn maternity from 1902 to 1912 with those from 1912 to 1919 a total of 657 cases of contracted pelvis in 8,417 births in the first period, and 691 to 7,114 in the second period. The modern methods of managing such cases allows longer expectant treatment so that the number of spontaneous deliveries increased by 17.6 per cent. in the second period, while the mortality of the children was less by 5.6 per cent.

Münchener medizinische Wochenschrift, Munich

Aug. 6, 1920, **67**, No. 32

Motility of Spirochæta Pallida. F. W. Oelze.—p. 921.
Histochemistry of Central Nervous System. F. Groebbels.—p. 923.
Even Dosage in Deep Roentgen Therapy. H. Holfelder.—p. 926.
*Determination of Mercury in the Urine. Autenrieth and Montigny.—p. 928.
War Observations on Thrombosis. A. Dietrich.—p. 931.
Demonstration of Spirochetes in Tissues. F. Jahnel.—p. 932.
Simplified Nutrient Mediums. Marx and Eichholz.—p. 933.
Right Lung More Often Involved in Tuberculosis. Mayer.—p. 935.
Radiotherapy and Variations in City Current. H. Martius.—p. 936.
The Supporting Function of the Lungs. A. Brunner.—p. 938.

The Determination of Mercury in the Urine.—Autenrieth and Montigny find that the quantitative determination of mercury in the urine by the colorimetric method is simple and sufficiently accurate for practical purposes. Owing to the manner in which mercury is employed, it is seldom excreted in the urine in other than very small quantities, so that the colorimetric method is especially appropriate. But this method is applicable only in case no other metal precipitated by hydrogen sulphid, such as lead, copper, silver, tin and bismuth, is present. It is just as accurate as the gravimetric method of Schumacher and Jung, and is not much inferior, if any, to the electrolytic method of Buchtala, and has the advantage of not requiring a delicate scale for its application such as is needed in the Buchtala method.

Therapeutische Halbmonatshefte, Berlin

July 15, 1920, **34**, No. 14

Pathogenesis and Therapy of Anemia. Isaac.—p. 373. Begun in No. 13, p. 341.
Protein Therapy. H. Sachs.—p. 379. Conc'n in No. 15, p. 405.
Strictures of Esophagus Due to Corrosives. Schilling.—p. 385.
Case of Luminal Poisoning. J. Stein.—p. 387.

Aug. 1, 1920, **34**, No. 15

*Treatment of Disturbed Pancreatic Function. W. Stepp.—p. 409.
*Morphin in Pneumonia and Dysentery. Aufrecht.—p. 412.

Treatment of Disturbed Pancreatic Function.—Stepp states that it is important from the therapeutic standpoint that defective absorption of fat is not due, as might be supposed, to a disturbance in the fat-splitting function. Therefore, diminished fat absorption has nothing to do with the external secretion of the pancreas but must be regarded as the result of a disturbed internal secretion. Further evidence of this is the fact that if the excretory duct is artificially closed, thus excluding the pancreatic secretion from the intestine, marked steatorrhea does not result. Steatorrhea may give the stools the appearance of being covered with butter, or it may be evident only with chemical analysis. He emphasizes that in severe cases of disturbed pancreatic function with marked derangement of fat absorption, practically nothing can be accomplished by even large doses of pancreas preparations, although disturbed protein digestion can be much relieved. But in milder disturbances pancreatic preparations produce wonderful results. The fatty stools disappear, the number of striped muscle fibers in the stools is much decreased, and the weight and general health improve. Either the gland itself or preparations of the gland may be administered. Fresh pig or beef pancreas may be given, either ground fine in the form of an emulsion or chopped fine and seasoned with salt, etc. From one fourth to one half of a beef or pig pancreas may be given daily. The gastric secretions, especially the volume of hydrochloric acid, should be studied as they affect the activities of the pancreas. The diet must be carefully regulated, and only easily digested food eaten; especially fats that are not easily assimilated should be avoided.

Uses of Morphin.—Aufrecht states that subcutaneous injections of morphin accomplish wonders in alleviating the almost

unbearable pains in the side that frequently accompany the onset of pneumonia and permit only very shallow inspiration, thus leading to marked dyspnea. For patients in middle life he uses not less than 0.015 gm. He verified the great value of the remedy also in his own individual case. The pneumonia began with such severe pains in the side that he resorted at once to morphin. A few minutes after the injection of 0.02 gm. the pains had disappeared. He has been using morphin for this purpose for many years, and has no need of cupping or ice-bags. In dysentery, he says further, the view still seems to prevail that a cathartic (usually castor oil) should be administered the first thing. The indications for such treatment were based on the old theory that dysentery was the result of the decomposition of the ingested food. Now that we know otherwise the use of the cathartic is no longer indicated. He treated many cases of dysentery and a few of typhoid successfully with small internal doses of morphin (from 0.01 to 0.015 gm. once or twice a day), together with proper regulation of the diet. He cites one case particularly in which the patient was referred to him in an exhausted condition three weeks after onset. A morphin injection of 0.015 gm. was given. The pains ceased, control of the stools was regained, and the pulse grew stronger. The next day another injection was given, following which the patient recovered.

Wiener klinische Wochenschrift, Vienna

Feb. 26, 1920, **33**, No. 9

Hypoplasia of the Testes in Adolescence. J. Kyrle.—p. 185.
Investigations on War Wound Secretions. E. Jeckl.—p. 189.
Lethargic Encephalitis. K. Gross.—p. 192.

March 4, 1920, **33**, No. 10

Relation of Retrobulbar Neuritis to Nasal Cavity. Meller.—p. 205.
Retrobulbar Optic Neuritis and Multiple Sclerosis. Marburg.—p. 209.
Physiology and Pathology of Bladder Function. VI. O. Schwarz.—p. 210.
Simulation by Epidemic Encephalitis of Surgical Diseases in the Abdominal Cavity. C. Massari.—p. 214.

Aug. 19, 1920, **33**, No. 34

Gold Reaction in Secondary Syphilis. Kyrle and others.—p. 745.
Protein Therapy, Particularly in Syphilis. K. Schreiner.—p. 748.
*A Diagnostic Procedure in Heart Disease. J. Tornai.—p. 750.
Tissue Injury from Black Italian Thread. O. Sachs.—p. 752.
Relations Between Otosclerosis and Tetany. H. Frey and K. Orzechowski.—p. 754. Begun in No. 32, p. 697.

A Diagnostic Procedure in Heart Disease.—Tornai states that with the patient lying on the abdomen or chest the heart and its large vessels are brought nearest to the anterior chest wall. In this position, also, the filling of the ventricles, especially the left, is greatest, in which connection he recalls the well-known fact that the pathologic sounds occurring in valvular defects are produced for the most part by the blood flowing through the left ventricle. In order to make the patient accessible to auscultation he has him assume the knee-elbow position, in which the patient supports himself on the knees and the palms of the hands, with the chest in a horizontal position. He uses a short stethoscope.

Zentralblatt für Chirurgie, Leipzig

Aug. 7, 1920, **47**, No. 32

*Healing by Second Intention. T. Escher.—p. 970.
*Influence of Anesthesia on Inflammation. A. W. Meyer.—p. 974.

Healing by Second Intention.—Escher feels that more emphasis should be placed on healing by second intention. Under hydrophilous dressings the smaller wounds often heal without unfavorable reactions and produce good scars, but in all large, open wounds, if they are covered with absorbent gauze applied direct to the wound without other protection, certain phenomena arise that are without doubt brought about by a continuous irritation of the wound and the surrounding tissue, the cause of which in the past many have not taken sufficiently into account. Escher emphasizes that, by the continuous contact of the hydrophilous dressings, more especially the gauze, with the wound, the wound secretions are completely absorbed and dried up. To remedy this condition he applies strips of gutta percha tissue to the edges of the wound and the adjoining granulations. When the dressings were changed it was significant that it caused the patient no pain. Under these strips the young cells gradually assumed a more normal appearance, and the ridges along the edges of the wound, without the use of any other means, sank down to the level of the scar. He secured good results also from covering over the whole granulating wound surface. Applying his treatment later to fresh wounds he found that all the irritating effects of the gauze were avoided; the wounds remained moist, covered with a sparse, serous secretion. No edema appeared, no troublesome infiltration of the bed and the edges of the wound. The wound remained soft and pliable. The granulations developed naturally, being of normal consistency, color and volume; did not bleed; did not check the formation of scar tissue nor the rapid union of the edges of the wounds after they became spontaneously cleansed. It was found also, when the supply of gutta percha tissue became exhausted, that parchment paper, if made pliant by dipping it in a solution of mercuric chlorid, served the same purpose.

Effect of Local Anesthesia on Inflammation, Especially Erysipelas.—Meyer relates disappointing experiences with injections of a 1 per cent. solution of procain and epinephrin in the treatment of erysipelas. The injections were made subcutaneously and intracutaneously about 1 cm. distally from the advancing erysipelas border. He thinks that checking of inflammation by local anesthesia, at least in progressive forms of erysipelas, is to be viewed with caution.

Zentralblatt für Gynäkologie, Leipzig

Aug. 7, 1920, **44**, No. 32

So-Called War Amenorrhea. A. Nilsson.—p. 876.
*Transverse Avulsion of the Sigmoid Colon. F. Michel.—p. 883.
Cervical Atresia Intra Partum. H. Hisgen.—p. 885.
*Amputation of Gravid Uterus. W. Nacke.—p. 886.

Sigmoid Colon Torn from Rectum in Curetting.—Michel reports a case of avulsion of the sigmoid colon in a woman of 26 referred to him by another physician. The latter, suspecting retention of remnants of an abortion, had performed a curettage, but instead of the expected placental tissue he drew forth a loop of the large intestine, torn off straight across. He closed the lumen of the rectum with a catgut suture and referred the case to Michel, who, as he did not see the case until ten hours after the injury, thought it unwise to perform a radical operation at once, as he would have done could he have operated immediately after the injury. Instead, he inserted a large rubber drain into the Douglas pouch. The next morning he made an artificial anus in the cecum as a prophylactic measure. On the third day, as no flatus had passed and the abdomen was rather distended, he opened up the artificial anus. The day following both stool and flatus passed through the vagina also. Seven days afterward the patient got up, as the artificial anus was then functioning adequately. Four weeks later, after thorough cleansing of the rectum, a longitudinal median incision was made. Loose adhesions between the small intestine and the uterus were broken up. The bladder was freed from adhesions and the parametrium opened up, following which the uterus, together with the adnexa, was removed. The distal stump of the rectum seemed too much shriveled to mobilize. Accordingly, the mobilized sigmoid stump was drawn down through the distal end. Through the Douglas pouch the two telescoped portions of the rectum were fastened by sutures. A moist gauze wick was laid in the Douglas and brought out through the vagina. Regular and natural passage of the feces occurred from the fourth day on, and the patient recovered rapidly and completely.

Supravaginal Amputation of a Gravid Myomatous Uterus.—Nacke reports a case of supravaginal amputation of a myomatous uterus in a woman of 42 during the fifth month of her first pregnancy. On the posterior side of the cervical stump a myoma about the size of a walnut was left at the operation because it was feared that its enucleation would make it more difficult to manage the refractory parenchymatous hemorrhage in the deeper tissues between the rectum and the cervical stump. Although no fever was present, eight weeks after the primary operation an excessive growth of the myoma nodule that was left led to serious manifestations of ileus. At a secondary operation this myoma, the size of an apple, was enucleated; it had become gangrenous. Thirteen days after the second operation the patient was able to

leave her bed and felt well in every way. While admitting that possibly the patient might have stood total extirpation of the gravid myomatous uterus just as well as the supravaginal amputation, Nacke emphasizes that supravaginal amputation is the easier and more rapid form of intervention, and in spite of the severe late complications arising in this case he prefers supravaginal amputation to total extirpation in the presence of serious deep hemorrhage, if the patient is anemic or weakly, or if the operation is complicated by extensive adhesions with the intestine or omentum, or by tumors of the adnexa. In uncomplicated cases total extirpation would likely be indicated.

Zentralblatt für innere Medizin, Leipzig

Aug. 7, 1920, **41**, No. 32

*Determination of Total Blood Volume. Boenheim and Fischer.—p. 553.

Aug. 14, 1920, **41**, No. 33

Progress in Ophthalmology in 1919. Koeppe.—p. 569.

Total Blood Volume.—Boenheim and Fischer refer to Löwy's article on the determination of the total blood volume in living subjects, an abstract of which appeared in the current volume of The Journal, p. 1104. They report that the Bang micromethod used by Löwy for determination of the sodium chlorid content is not sufficiently accurate to secure even approximately accurate results in regard to the total blood volume. For this reason they deny the clinical value of Löwy's method by this technic, although approving the principle of the method.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

Sept. 18, 1920, **2**, No. 12

The Fundamental Shape of the Stomach, and Megacolon. L. Bolk.—p. 1073.
*Fat Content of Blood. J. C. Schippers.—p. 1081.
The Meinicke Serologic Test in Syphilis. B. Luza.—p. 1087.
Care of Nervous and Mental Disease. J. L. van Lier.—p. 1092.
Prophylaxis of Tuberculosis. C. Metzlar.—p. 1099.

Low Fat Content of Blood in the Exudative Diathesis.—Schippers queries whether the unusually small fat content of the blood in infants with the exudative diathesis may not throw light on the nature of this anomaly. He found in other infants, healthy and sick, and in older children that the neutral fat in the blood was close to 0.1 per cent. but in children with the eczema of the exudative diathesis it was less than half of this. The cholesterin, ester and phosphatid content was approximately the same in the different groups except that the esters content was nearly twice as high in older children. His tests showed no appreciable influence from fat in the preceding diet on the fat content of the blood. He adds that infants with the exudative diathesis are known to run a higher temperature than others as a rule, and possibly this may be due to the greater avidity of their tissues for fat and its more rapid oxidation in them.

Hospitalstidende, Copenhagen

Sept. 1, 1920, **63**, No. 35

*Syphilis in Java. N. A. V. Sørensen.—p. 537.
*Syphilitic Disease of Nasal Accessory Cavities. V. Schmidt.—p. 544. Conc'n in No. 36, p. 553.

Unusual Forms of Syphilis in Java.—Sørensen had occasion in seven instances during his service in Java to change the recorded diagnosis of pulmonary tuberculosis to pulmonary syphilis. The first case of the kind had been sent to the hospital to die as an advanced case of phthisis. No tubercle bacilli could be found in the sputum but hemoptysis was frequent. The casual discovery that the tuberosity of the tibia was swollen gave the clue to the syphilitic nature of the disease, and under mercurial treatment the "phthisis" disappeared. The patients were all Dutch soldiers except one, and there were no other signs or history of syphilis. He has later encountered some cases of the kind in Holland. In four other cases, recruits presented a continuous fever of 40 and 40.5 C. (105 F.). Their general condition was not bad enough to correspond to this high temperature. All the palpable lymph glands were enlarged and hard, but not tender. Agglutination for typhoid was negative but the Wassermann reaction was positive. Under mercury the fever declined and full diet was allowed. In another case of the kind the fever had kept up for thirty-five days before syphilis had been suspected.

Syphilitic Disease of the Nasal Sinuses.—Schmidt reports some long misinterpreted cases which have taught him the necessity for suspecting syphilis in all cases of disease of the air spaces accessory to the nose. Among his eighty-one cases of sinusitis, over 17 per cent. were syphilitic. Omitting those with syphilitic manifestations elsewhere, there were 9.9 per cent. with the syphilitic disease in the sinuses alone.

Hygiea, Stockholm

Sept. 16, 1920, **82**, No. 17

*Empyema of the Chest After Influenza. G. Vidfelt.—p. 545.
*Spurious Whooping Cough. W. Wernstedt.—p. 559.

Sept. 30, 1920, **82**, No. 18

Influenza. H. Bergstrand.—p. 584.

Purulent Pleurisy After Influenza.—Vidfelt found the streptococcus responsible for 70 of his 127 cases of empyema in two recent years, and the mortality in this group was 35.7 per cent. The diplococcus was responsible in 43 cases; mortality 7 per cent., and mixed infection in 2 cases, both fatal, while all recovered of the 7 patients with sterile empyema under puncture and aspiration alone. A thoracoplastic operation was necessary in the 6 chronic cases, all with favorable outcome. The prognosis in the 3 bilateral cases seemed to be determined by the bacteriologic findings, the streptococcus case being the only one to terminate fatally. One practical conclusion from his experience is that a preliminary thoracocentesis in the streptococcus cases, with secondary thoracotomy, gives much better results than a primary thoracotomy.

Spurious Whooping Cough in Spasmophilia.—Wernstedt has noted that a cough in children is more likely to be of a spasmodic character the more pronounced the response to the galvanic current. An ordinary catarrhal "cold" in a child inclined to spasmophilia may induce a cough which it is impossible to distinguish from that of true whooping cough. In a recent epidemic of this spurious pertussis in a children's institution, no possibility for contagion with true pertussis could be discovered, and those children alone were affected who were known to have typical spasmophilia. The importance of mistaking the true for the spurious type is evident, and to aid in the distinction he describes with minute detail a case which he is convinced is a pseudopertussis in a 5 months infant with spasmophilia. During the five months the child was under observation, the severity of the spasmodic coughing varied parallel to the severity of the spasmophilia, and the whooping paroxysms could be brought on or banished at will by feeding the infant whey with or without protein. The child did not begin to cough until it had been for two months in the institution.

Ugeskrift for Læger, Copenhagen

Sept. 9, 1920, **82**, No. 37

*Transfusion in Nitrobenzene Poisoning. S. Hindse-Nielsen.—p. 1157.
Influenza in Greenland. J. Bichel.—p. 1163.

Nitrobenzene Poisoning.—The artificial oil of bitter almonds, or nitrobenzene, is occasionally taken, or used by mistake for benzaldehyd, but the resulting symptoms are liable to be mistaken for potassium cyanid poisoning. The odor of the breath is the same, but with the latter the complexion is natural while with nitrobenzene poisoning there is intense cyanosis. Early differentiation is important, as transfusion of blood may prove life saving, with nitrobenzene poisoning, as in a case described, while this would be irrational with the other, as the blood is ready to give up its oxygen but the tissues have lost the capacity of taking it up. The stomach must be freely rinsed out with nitrobenzene poisoning, concluding by pouring through the tube 0.5 gm. of calomel, or better yet, a saline purge, as this would prevent absorption. Castor oil, oil, milk, and alcohol must not be allowed, as they help to dissolve the poison further. A warm bath with a cold douche proved extremely beneficial in three cases. Nitrobenzene destroys the erythrocytes, transforms the oxyhemoglobin into methemoglobin, irritates and then paralyzes the central nervous system, and has a dilating effect on the heart.